

# Enhancing Skills to Reduce Preschoolers' Disruptive Classroom Behaviors and Improve Classroom Engagement

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**How to cite this paper:** Nabors, L., Newman, D., Pogue, H., Hoffman, C., Tilford, A., & Hawkins, R. O. (2022). Enhancing Skills to Reduce Preschoolers' Disruptive Classroom Behaviors and Improve Classroom Engagement. *Psychology*, 13, 1196-1213.  
<https://doi.org/10.4236/psych.2022.138078>

**Received:** April 13, 2022

**Accepted:** August 20, 2022

**Published:** August 23, 2022

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## Abstract

**Background:** Disruptive behaviors are often a sign of emotional dysregulation in young children, and this can hinder their engagement and development. **Purpose:** This pilot study presents results from five case studies with preschool-age children exhibiting disruptive classroom behaviors. **Method:** The intervention package included participation in a social skills curriculum and the use of calming techniques to facilitate emotional regulation. Observations were used to assess change in engagement and disruptive behaviors. Teacher perceptions of the intervention were examined. **Results:** Findings indicated improved engagement and reduced disruptive behaviors in all five students who learned skills for emotional regulation. Also, teachers found the social skills interventions practical and effective. **Conclusion:** Improving social skills and teaching calming techniques to regulate emotions fostered classroom engagement and reduced disruptive behaviors for preschoolers.

## Keywords

Emotional Regulation, Calming Techniques, Preschoolers, Social Skills, Disruptive Behaviors

## 1. Introduction

Early childhood is a critical time for refraining from disruptive behaviors, engaging in positive peer and adult interactions, and engaging in cooperative play with other children (Broekhuizen et al., 2017). Disruptive behaviors, such as aggression and destructive behaviors, can negatively impact preschool-age children's functioning (Carlson & Wang, 2007; Eisenberg et al., 2017). Teachers may perceive young children's disruptive behaviors as troublesome, upsetting for the

classroom milieu, and as grounds for expulsion (Floress et al., 2018; Smith et al., 2005). Moreover, young children who exhibit disruptive and aggressive behaviors may have difficulty transitioning to elementary school and they may display delays in social and emotional functioning or problems with academic achievement (Graziano et al., 2016; Grimm et al., 2010). Early detection and remediation of disruptive behaviors may result in more positive social trajectories for young children (Menzies & Lane, 2011).

Carlson and Wang (2007) reported that emotional regulation is inextricably linked to social functioning, such that emotional regulation is related to positive engagement and behaviors during interactions. Carlson and Wang (2007) also proposed that uncontrolled expressions of anger, a type of dysregulated behavior, are detrimental to a child's engagement with others in the school setting. Hughes et al. (1998) found that preschoolers with behavioral problems showed a poor understanding of emotions and executive control of their own emotions and behaviors. As such, dysregulated, disruptive behaviors exhibited by young children may have a negative impact on social development (Lochman et al., 2012) and place children at risk for developing behavioral disorders (Carlson & Wang, 2007; Eisenberg et al., 2017). Increasing engagement is critical in the early years due to its positive relationship with enhanced social and cognitive development (Test & Cornelius-White, 2013). As such, reducing disruptive behaviors, through helping the child engage in self-regulation strategies, as alternative behaviors when a child is angry or upset, may reduce negative behaviors and increase opportunities for engagement. Additionally, if the child is acting in a more positive fashion, it may be easier for the child to engage with others during classroom activities. Strategies for socially appropriate expression of anger may include self-regulation strategies (e.g., breathing and relaxation) and positive behaviors (e.g., going to talk to the teacher, going to a calm-down spot). For the current study, calming cards were used as one intervention technique to help children remember to use self-regulation and anger management strategies in the classroom.

In addition to practicing self-regulation strategies in the classroom, social skills groups may be another intervention to enhance child knowledge of prosocial behaviors and provide opportunities to practice positive social behaviors and behaviors that will improve self-regulation and anger management (Diaz et al., 2017). Social skills instruction may often rely on teaching children anger management strategies, which involve preventing impulsive, disruptive responses (e.g., aggression) by using strategies that involve cognitive, behavioral, and emotional control of negative reactions (Smith et al., 2005). Strategies in these groups often focus on self-regulation skills, such as breathing, counting to ten and walking away, or going to find an adult if one is feeling angry with a peer. Children also learn positive social behaviors, such as how to join a play group, share, and take turns while playing with others. In addition, social skills interventions emphasizing positive behaviors also have the potential to help children learn appropriate responses, thereby promoting success in the classroom (Di-

Perna & Elliott, 2002; Gresham, 2016; McGinnis & Goldstein, 1990).

This pilot study employed the two aforementioned interventions (learning calming techniques and social skills) for teaching self-regulation to preschool-age children. The guiding idea was that if young children were able to use cognitive-behavioral strategies, allowing them to develop and implement alternative social and self-regulation strategies, they would exhibit higher levels of engagement and lower levels of negative behaviors in the classroom (Sukhodolsky et al., 2016). Five children exhibiting disruptive behaviors participated in a social skills group (held outside the classroom) and used calming cards focusing on self-regulation strategies. It was hypothesized that children who participated in the intervention package would show decreased disruptive behavior (anger, aggression, destructive behaviors) and show improved engagement (interacting appropriately with others in the classroom and engaging in classroom activities) after receiving the interventions.

## 2. Method

### 2.1. Participants

Five children (4 boys and 1 girl; aged three or four years), with disruptive behaviors (see [Table 1](#)), in preschool classrooms at a university-based preschool center participated. This research was approved by a university-based institutional review board and parent consent was required for participation.

### 2.2. Assessment

Children's classroom progress in reducing disruptive behaviors and improving engagement was recorded using interval recording on an observation form (Ling et al., 2011; see Appendix A). Engaged behavior was defined as any instance in which the student appropriately requested attention from adults or peers or

**Table 1.** Presenting problems for the five cases.

Case	Presenting Problems
One, Brian	Disruptive behaviors during circle time, getting out of seat, touching peers. Also, disruptive behavior in the classroom such as destroying structures, chasing peers, and wrestling.
Two, Miller	Disruptive behavior including hitting and kicking other children and destroying structures children had built.
Three, Walker	Disruptive behavior during circle time (touching peers) and a lack of appropriate play behaviors with peers were referral issues. During play Walker would wrestle with peers and could knock them to the ground.
Four, Mason	Disruptive behaviors in the classroom included screaming, hitting others, grabbing objects from peers, throwing objects, and grunting.
Five, Molly	Molly was referred for inappropriate behaviors: running around the room, yelling, crying, standing on furniture, and physical aggression toward adults.

interacted appropriately with adults or peers. This included verbalizing wants or needs from adults and peers, engaging in cooperative play with peers, and engaging in conversations with adults or peers. This did not include disruptive behaviors, such as: screaming, grunting, hitting, and throwing objects. Disruptive behaviors also included gaining or requesting attention from adults or peers by using inappropriate physical contact (e.g., pushing, grabbing, shoving, hitting), throwing objects or verbal actions (screaming, grunting). School psychology graduate students receiving supervision from a licensed psychologist (described herein as clinicians) observed the children. The interventions were not withdrawn as a positive change in disruptive and aggressive behaviors needed to be maintained in the classrooms.

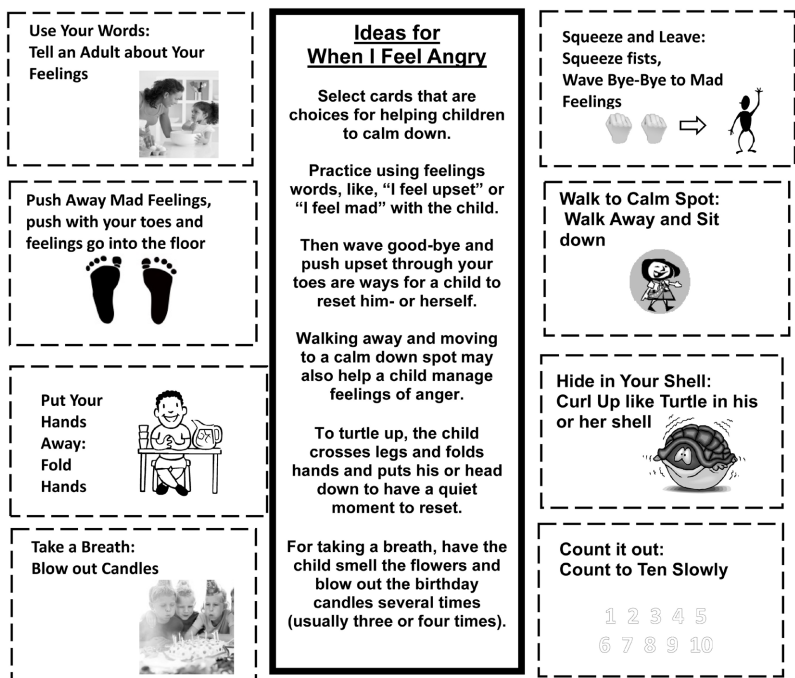
### 2.3. Interobserver Agreement (IOA)

IOA focused on agreements/disagreements by intervals across sessions. IOA was collected during baseline and intervention sessions and was calculated as  $\text{Agreements}/(\text{Agreements} + \text{Disagreements}) \times 100\%$  (Reed & Azulay, 2011). Clinicians co-observed with other students in the classroom when observing appropriate (e.g., engagement) and inappropriate (e.g., disruptive) behaviors. Best practices state that IOA should be at least 80% (Cooper et al., 2007; Kennedy, 2005). For cases one through three (Brian, Miller, and Walker), IOA was collected for 25% of the baseline sessions, with a score of 98% IOA. During intervention, IOA was collected for 18% of observation sessions and resulted in an average of 98% IOA (range, 96% - 100%). For case four (Mason), IOA was conducted on 45% of all observed sessions and the average agreement was 98%. For case five (Molly), IOA was collected for 37% of all observation sessions during the intervention phase. Averages for all of IOA observations were 97%.

### 2.4. Procedures

Children with disruptive behaviors were enrolled in this study, after being referred by teachers and receiving parental consent forms. Children received instruction on the use of calming cards from clinicians. Children learned to use the cards through reviewing visual stories (see example, Appendix B) and role-play with the clinicians. The “calm down cards” provided cues for positive behaviors and emotion regulation strategies. The strategies included telling an adult your feelings, walking to a calm spot, curling up like a turtle in its shell, taking a breath and blowing out the candles, squeezing fists and waving goodbye to mad feelings, counting to ten, folding hands, and pushing away mad feelings through your feet (see [Figure 1](#)).

After the children had learned how to use the calming cards, the cards, along with visual cards with stories for how to use the cards, were delivered to classrooms. Clinicians reviewed training procedures with teachers and instructed teachers about triggers for disruptive behaviors. Clinicians identified triggers for the child and role played how to use the cards when triggers were observed.



**Figure 1.** Emotion regulation cards.

They explained the importance of trying to have the child use the cards when they initially saw triggers for disruptive behaviors (e.g., red face, raised tone of voice, angry features). Clinicians also helped the child “practice” (through role play) using the cards. These cards were kept in an envelope that the child could access (e.g., on the teacher’s desk, in child’s cubby). Teachers directed children to use the cards or the child could use them voluntarily. The child was instructed to review the cards as many times as needed until he or she felt he/she could return to play and not be upset or angry. After returning the cards to the envelope, the child would return to the classroom activity in which he or she was engaged.

The children also participated in a social skills group that was held weekly, which was adapted from the intervention entitled, Skillstreaming (McGinnis & Goldstein, 1990). Eight skills were targeted during meetings. These skills were calming down (e.g., use of breathing), knowing your feelings (understanding feelings and triggers for becoming angry), coping with being mad (using words, learning to use calm behaviors), engaging in positive circle time behaviors, deciding what to do for appropriate play (e.g., instruction on how to play in different classroom centers), ideas for play entry (“can I play too?”), sharing toys, and accepting the answer “no” from teachers and peers. One or two clinicians held two weekly sessions (30 mins.), focusing on one or two skills per week. In the first weekly lesson the skill(s) was/were introduced and then the skill(s) was/were rehearsed in the second weekly lesson. Specifically, during the second weekly session, clinicians and children reviewed the skills from the first session using modeling and role play. The group leaders provided performance feedback and positive reinforcement when children exhibited skills. For the current study, four of the children participated in the social skills group and used the cards si-

multaneously, and one child completed the social skills group and then the calming cards were implemented in the classroom.

### 3. Results

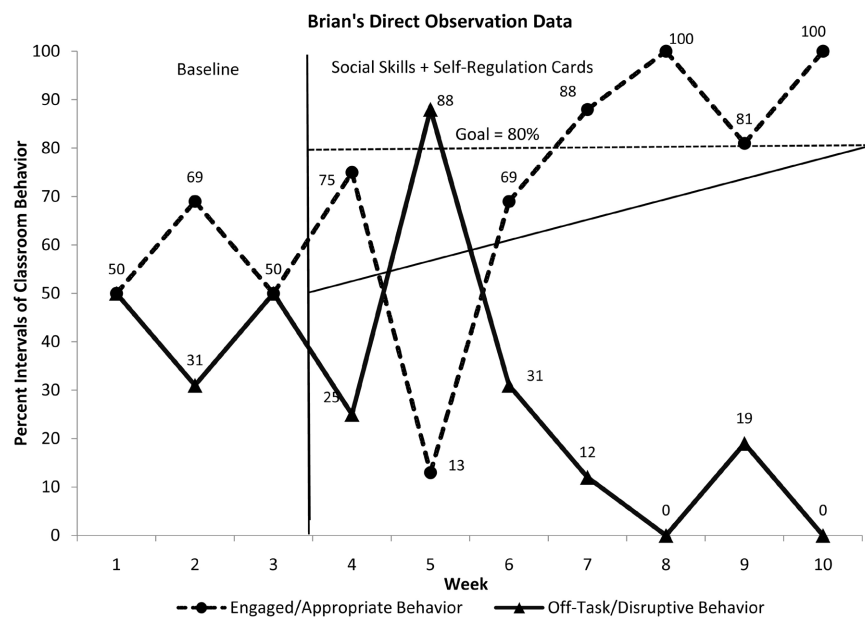
#### 3.1. Engaged and Disruptive Behaviors

Mean levels of appropriate or engaged behaviors and mean levels of inappropriate (disruptive/aggressive) behaviors at baseline and at the end of the intervention are presented in **Table 2**.

The percentage of non-overlapping data (PND; [Scruggs & Mastropieri, 1988](#)) was calculated by taking the number of intervention points that did not overlap with baseline points divided by the number of intervention points  $\times$  100. [Scruggs and Mastropieri \(1988\)](#) reported that over 90 is very effective, 70 to 90 is effective, 50 to 70 is questionable, and below 50 is ineffective. The Standard Mean Difference (SMD) was calculated by taking the intervention mean minus the baseline mean divided by the baseline standard deviation. The SMD is a good estimate of effect size in case studies ([Olive & Franco, 2008](#); [Olive & Smith, 2005](#)). [Cohen's \(1988\)](#) effect sizes of 0.2 (small), 0.5 (medium) and 0.8 (large) were used to judge the effect size with the SMD ([Olive & Franco, 2008](#)). Data for PND and effect sizes are presented in **Table 2**.

#### 3.2. Visual Inspection of the Data

Although the SMD and the PND are important, [Olive and Smith \(2005\)](#) proposed that visual inspection of the data is critical to determining meaningful clinical change. [Olive and Smith \(2005\)](#) cited [Kazdin's \(1982\)](#) work as critical to supporting the value of visual inspection, which is discussed for each case (Brian, Miller, Walker, Mason, and Molly) in **Figures 2-6**.



**Figure 2.** Brian's observation data.

**Table 2.** Summary statistics representing changes in appropriate and inappropriate behaviors, PNDs, and SMDs for the five cases.

Case	Summary Statistics	Appropriate Classroom Behaviors	Inappropriate Classroom Behaviors
One, Brian	Number of Baseline Points	3	3
	Number of Intervention Points	7	7
	Baseline <i>Mean</i>	56	43.66
	Baseline <i>SD</i>	10.97	10.97
	Intervention <i>Mean</i>	75.14	25
	Intervention <i>SD</i>	29.82	30.17
	PND	71%	14%
	SMD	-1.74	1.23
Two, Miller	Number of Baseline Points	4	4
	Number of Intervention Points	11	11
	Baseline <i>Mean</i>	62	37.75
	Baseline <i>SD</i>	16.74	16.74
	Intervention <i>Mean</i>	73.45	26.82
	Intervention <i>SD</i>	25.02	25.05
	PND	45%	18%
	SMD	-0.68	0.65
Three, Walker	Number of Baseline Points	4	4
	Number of Intervention Points	11	11
	Baseline <i>Mean</i>	59	40.75
	Baseline <i>SD</i>	8.14	8.14
	Intervention <i>Mean</i>	89.36	10
	Intervention <i>SD</i>	9.71	7.78
	PND	91%	0%
	SMD	-3.73	3.78
Four, Mason	Number of Baseline Points	3	3
	Number of Intervention Points	8	8
	Baseline <i>Mean</i>	46.3	15.8
	Baseline <i>SD</i>	31.3	8.3
	Intervention <i>Mean</i>	74.1	12.8
	Intervention <i>SD</i>	23.8	19.04
	PND	37.5%	37.5%
	SMD	-0.89	0.36

Continued

	Number of Baseline Points	3	3
	Number of Intervention Points	8	8
	Baseline <i>Mean</i>	55.8	27.2
Five,	Baseline <i>SD</i>	14.4	14.4
Molly	Intervention <i>Mean</i>	88.2	11.3
	Intervention <i>SD</i>	8.3	8.3
	PND	75%	75%
	SMD	-2.25	1.10

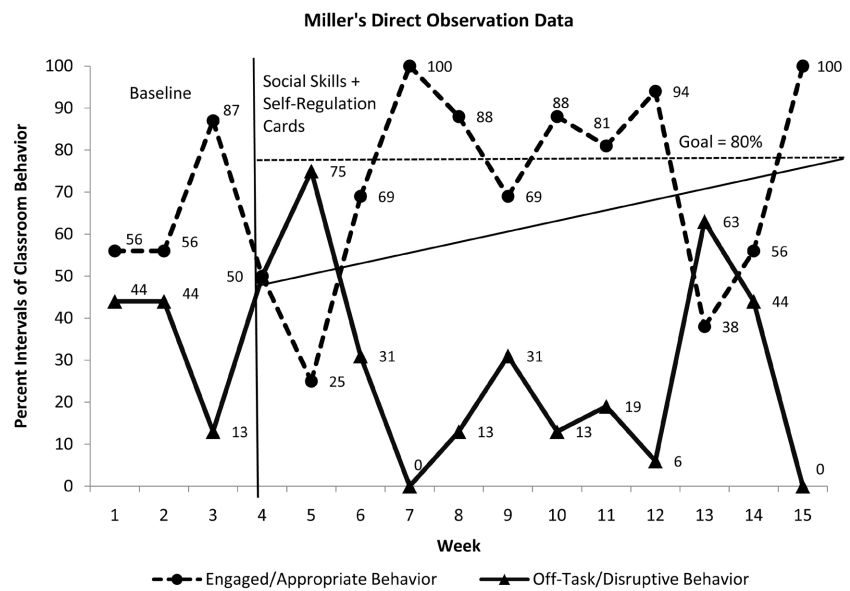


Figure 3. Miller's observation data.

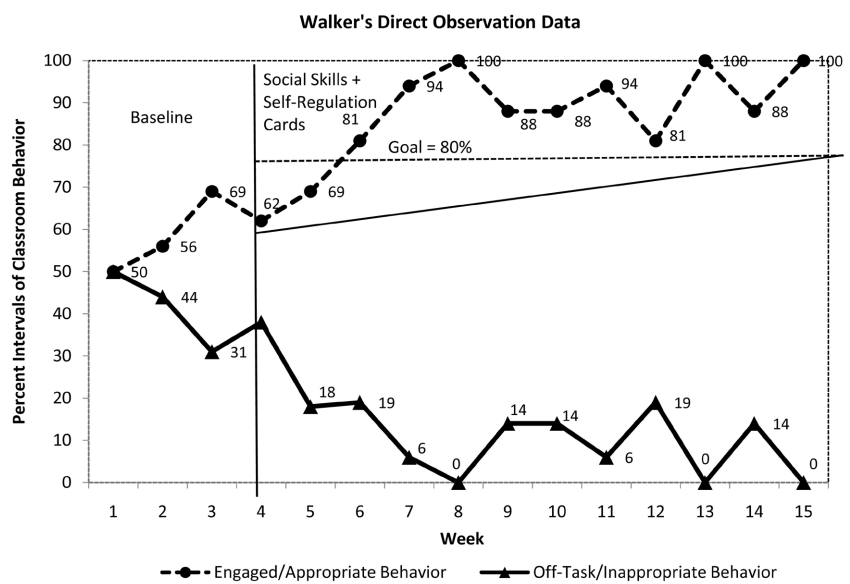


Figure 4. Walker's observational data.



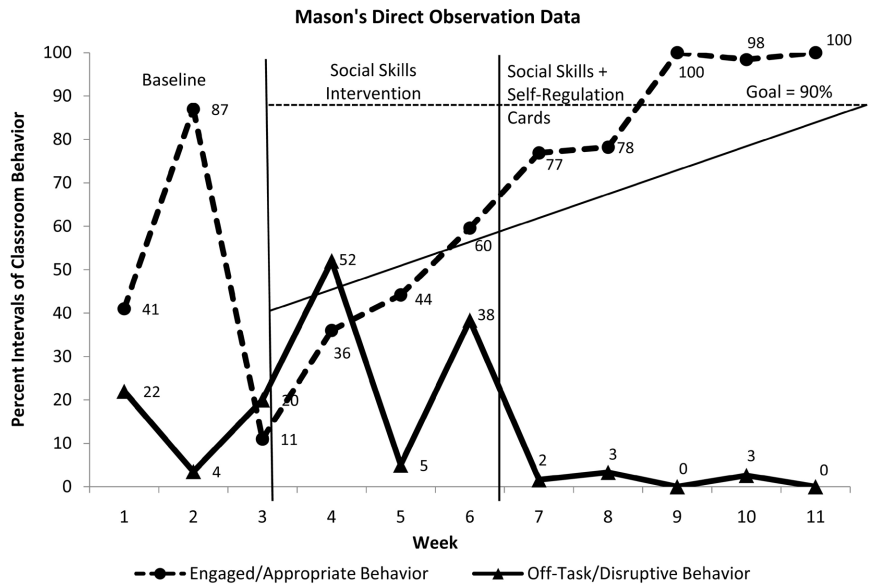


Figure 5. Mason's observational data.

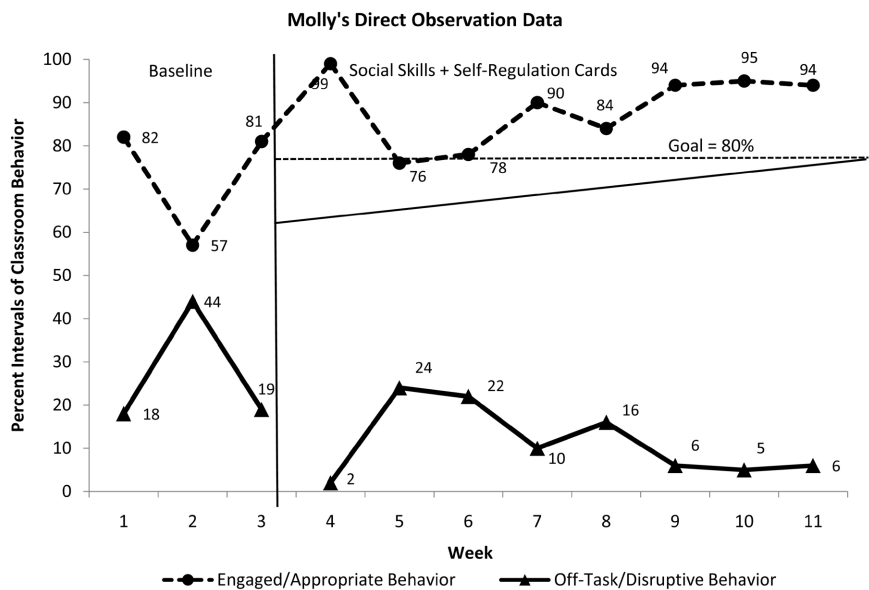


Figure 6. Molly's observational data.

Figure 2 shows Brian's behaviors during the baseline and intervention phases. The trend line for Brian's data on engagement indicated that positive behavior increased over time during the intervention phase. Beginning at the third intervention data point, data begin to show a vertical separation between the engagement (appropriate) and the disruptive (inappropriate) behaviors, displaying the magnitude of the change (see Figure 2). Brian evidenced a 19% improvement in appropriate behaviors and a 13% decrease in inappropriate behaviors (see Table 2). Figure 3 shows Miller's behaviors during the baseline and intervention phases. The increasing trend line of Miller's data shows that engagement behaviors were slightly increasing during the intervention phase (see Figure 3).

Miller's data was variable at times. A teacher interview indicated this could have been attributed to changes occurring within his foster family. **Table 2** shows the positive change in appropriate behaviors and the resulting decreases in inappropriate behaviors for Miller. **Figure 4** shows Walker's behaviors during the baseline and intervention phases. The increasing trend line of Walker's data shows that engaged behaviors were increasing during the intervention, and were positive from the second week of the intervention onward (see **Figure 4**). Walker showed a 30% improvement in engaged behaviors and a 30% reduction in disruptive behaviors (see **Table 2**). Mason's data indicated a positive trend line during the intervention phase (see **Figure 5**). Furthermore, Mason showed a 28% improvement in engaged behaviors and a 3% change in disruptive behaviors (see **Table 2**). A visual analysis of Molly's data is presented in **Figure 6**. The figure displays a separation in trend lines indicating consistent increases in engaged behaviors (over 30%) and decrease in disruptive behaviors (see **Figure 6**). Molly's involvement in engaged behaviors showed over a 30% increase, while her disruptive behaviors were at 16% (see **Table 2**).

### 3.3. Social Validity

Clinicians used adapted versions of two assessment tools to assess teacher perceptions of social validity, the Behavioral Intervention Rating Scale (BIRS; Elliott & Treuting, 1991) and the Intervention Rating Profile (IRP-15; Martens et al., 1985). The BIRS was used by one clinician for teachers of three students (i.e., Brian, Miller, and Walker), and the IRP-15 was used by two clinicians with teachers of two students (i.e., Mason and Molly). The BIRS had a 5-point scale (strongly disagree to agree) where teachers rated the acceptability of the interventions. Teacher ratings for the appropriateness and effectiveness of the interventions (social stories and calming cards) were "agree," the highest level. Ratings for the interventions being beneficial and appropriate for a variety of children were also "agree". The IPR-15 was implemented with a 6-point scale (strongly disagree to strongly agree). For the two cases where the IRP-15 was used, ratings were at a level of 5 ("agree") to 6 ("strongly agree") for the interventions being acceptable—beneficial for the children and practical for use in the classroom.

## 4. Discussion

Improving emotional and behavioral regulation remains important, as they are cornerstones of positive social and emotional development for young children (Diaz et al., 2017; Gresham, 2016; Sukhodolsky et al., 2016). Findings for this pilot study indicated that an intervention package combining social skills training and the use of calming cards to improve self-regulation supported improved engagement and reduced disruptive behaviors for young children with a variety of disruptive behaviors. All of the children showed increases in engagement in the classroom. Also, there were decreases in disruptive behaviors, which was consis-

tent with expectations based on previous research (Broekhuizen et al., 2017; Carlson & Wang, 2007; Diaz et al., 2017; Sukhodolsky et al., 2016). On the other hand, the standard deviations were large and inspection of graphs (see **Figures 2-6**) representing observed behaviors revealed variability in behaviors at different observation points, which might suggest that the intervention was less effective in some situations. Moreover, there were instances of less engagement and higher disruptive behaviors for Miller and Brian during the intervention period. Information is lacking about why this may have occurred for Brian. Miller, however, might have been arriving at school upset and angry due to conflict at home. In future studies, more information about contextual factors, such as stressors occurring at home and at school, is needed to determine the impact of contextual factors on child behaviors.

Observational data indicated that increases in engagement occurred within two weeks of implementation of the intervention package for four cases. Improvement also occurred in two weeks for Mason, during the social skills intervention, and then positive behaviors improved further with the addition of calming cards. Results from PND and SMD calculations provided further support for positive conclusions about engagement. However, these statistics did yield differing pictures of the success of the intervention package for engagement. For example, data for SMDs indicated a medium effect for change in engagement for Miller and large changes in engagement for the other four cases, presenting a very positive picture. On the other hand, PND data showed an effective and very effective change in engagement for three of the children, but ineffective change for Miller and Mason (see **Figure 3** and **Figure 5**). This may be due to changes across observations—perhaps related to the aforementioned contextual factors influencing behaviors. In order to analyze change in the current cases, statistical information was useful. However, visual inspection of graphed data showed observable changes, and this method for viewing data is practical in the classroom. Other researchers (e.g., Kazdin, 1982; Olive & Smith, 2005) have emphasized that visual inspection yields key information for clinical purposes.

In terms of disruptive behaviors, visual inspection of the data showed decreases in disruptive behaviors for all of the children, with a few exceptions (e.g., see Miller's data, **Figure 3**). This also provided support for the intervention package. The SMD data showed medium (for 2 children) to large effect sizes (for two children) for decreasing disruptive behaviors. However, for one child (Mason, see **Figure 5**), the SMD did not show support for a decrease in disruptive behaviors. However, this could have occurred because the intervention was applied in phases. The PNDs were not significant for four cases (the boys, **Figures 2-5**), but did reveal reductions in disruptive behaviors at naptime for Molly (**Figure 6**). On the other hand, social validity data indicated that teachers were pleased with the intervention and believed it was successful. Also, visual inspection of trend lines showed significant clinical improvement. This provides sup-

port for continued examination to optimize the use of these interventions.

## 5. Limitations, Implications, and Conclusions

Several limitations were noted. For example, an AB design was used. It was not possible to return to baseline, as interventions needed to remain in place due to their success in reducing disruptive behaviors. Accordingly, it is not possible to draw causal inferences from the data. Future research would benefit from using a multiple baseline design across children, with a clearly defined treatment induction for each child. Moreover, it is not possible to tell which intervention, the social skills groups or the cards were responsible for improved behaviors. Although Mason's data did suggest that the use of the calming cards further improved behavior, this could have been a result of behavioral momentum from the social skills group. Hence, further study to determine which intervention works and what happens when interventions are withdrawn is needed. Another limitation was that implementation data was lacking for teachers. It will be necessary to document how teachers worked with the children in future studies. Teachers' reports indicated high social validity, but two different assessment tools were used to assess teacher perceptions. Though the use of different surveys is a shortcoming from a research perspective, the positive ratings were indicative of the value and utility of the intervention package.

Findings supported the significance of continued research on interventions to promote self-regulation and prosocial behaviors for preschool-age children exhibiting disruptive behaviors. The interventions were valued by teachers. The use of calming cards was a practical classroom application of self-regulation skills. Developing visual schedules and cards for other social skills reviewed in the social skills groups (e.g., how to enter a play group, how to behave positively during center time) could provide a method for directly applying social skills in the classroom. Understanding how behavioral cards for a variety of social skills "work" in terms of improving engagement and prosocial behaviors should be examined in future studies. Partial replication studies with a larger number of cases across multiple settings are needed and, if possible, examining behaviors with the withdrawal of support to determine if skills are maintained in the absence of the interventions will provide information about whether the intervention can be withdrawn with continued positive behavioral trajectories. Field notes indicated the calming cards were implemented more frequently when the clinicians were in the classroom. Learning more about ways to improve teacher implementation and assess implementation is an area for future research. Future research will be necessary to determine whether the child-directed positive behavior strategies will work as a prevention strategy—if implemented on a class-wide basis—and to determine whether the use of these interventions promotes positive change in academic readiness.

## Conflicts of Interest

These authors declare no conflicts of interest.

## References

- Broekhuizen, M. L., Slot, P. L., van Aken, M. A. G., & Dubas, J. S. (2017). Teachers' Emotional and Behavioral Support and Preschoolers' Self-Regulation: Relations with Social and Emotional Skills during Play. *Early Education and Development, 28*, 135-153. <https://doi.org/10.1080/10409289.2016.1206458>
- Carlson, S. M., & Wang, T. S. (2007). Inhibitory Control and Emotion Regulation in Preschool Children. *Cognitive Development, 22*, 489-510. <https://doi.org/10.1016/j.cogdev.2007.08.002>
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Lawrence Erlbaum Associates Publishers.
- Cooper, J. O., Heron, T. E. & Heward, W. L. (2007). *Applied Behavior Analysis* (2nd ed.). Pearson Education.
- Diaz, A., Eisenberg, N., Valiente, C., VanSchyndel, S., Spinrad, T. L., Berger, R., Hernandez, M. M., Silva, K. M., & Southworth, J. (2017). Relations of Positive and Negative Expressivity and Effortful Control to Kindergarteners' Student-Teacher Relationship, Academic Engagement, and Externalizing Problems at School. *Journal of Research in Personality, 67*, 3-14. <https://doi.org/10.1016/j.jrp.2015.11.002>
- DiPerna, J. C., & Elliott, S. N. (2002). Promoting Academic Enablers to Improve Student Achievement: An Introduction to the Mini-Series. *School Psychology Review, 31*, 293-297. <https://doi.org/10.1080/02796015.2002.12086156>
- Eisenberg, N., Hernández, M. M., & Spinrad, T. L. (2017). The Relation of Self-Regulation in Children's Externalizing and Internalizing Problems. In C. E. Essau, S. S. LeBlanc, & T. H. Ollendick (Eds.), *Ebook: Emotion Regulation and Psychopathology in Children and Adolescents* (Chapter 2, 18 p). Oxford University Press. <https://doi.org/10.1093/med:psych/9780198765844.003.0002>
- Elliott, S. N., & Treuting, M. V. B. (1991). The Behavior Intervention Rating Scale: Development and Validation of a Pretreatment Acceptability and Effectiveness Measure. *Journal of School Psychology, 29*, 43-51. [https://doi.org/10.1016/0022-4405\(91\)90014-I](https://doi.org/10.1016/0022-4405(91)90014-I)
- Floress, M. T., Rader, R. A., Berlinghof, J. R., & Fanok, P. C. (2018). Externalizing Behaviors within General, At-Risk, and Special Education Preschool Classrooms: A Preliminary Investigation. *Preventing School Failure: Alternative Education for Children and Youth, 62*, 279-288. <https://doi.org/10.1080/1045988X.2018.1443424>
- Graziano, P. A., Garb, L. R., Ros, R., Hart, K., & Garcia, A. (2016). Executive Functioning and School Readiness among Preschoolers with Externalizing Problems: The Moderating Role of the Student-Teacher Relationship. *Early Education and Development, 27*, 573-589. <https://doi.org/10.1080/10409289.2016.1102019>
- Gresham, F. M. (2016). Social Skills Assessment and Intervention for Children and Youth. *Cambridge Journal of Education, 46*, 319-332. <https://doi.org/10.1080/0305764X.2016.1195788>
- Grimm, K. J., Steele, J. S., Mashburn, A. J., Burchinal, M., & Pianta, R. C. (2010). Early Behavioral Associations of Achievement Trajectories. *Developmental Psychology, 46*, 976-983. <https://doi.org/10.1037/a0018878>
- Hughes, C., Dunn, J., & White, A. (1998). Trick or Treat?: Uneven Understanding of Mind and Emotion and Executive Dysfunction in "Hard-to-Manage" Preschoolers. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 39*, 981-994. <https://doi.org/10.1111/1469-7610.00401>
- Kazdin, A. E. (1982). *Single-Case Research Designs: Methods for Clinical and Applied Settings*. Oxford University Press.
- Kennedy, C. H. (2005). *Single-Case Designs for Educational Research*. Pearson.

- Ling, S., Hawkins, R. O., & Weber, D. (2011). Effects of a Class Wide Interdependent Group Contingency Designed to Improve the Behavior of an At-Risk Student. *Journal of Behavioral Education, 20*, 103-116. <https://doi.org/10.1007/s10864-011-9125-x>
- Lochman, J. E., Boxmeyer, C., Powell, N., & Jimenez-Camargo, A. (2012). Effective Day-care-Kindergarten Interventions to Prevent Chronic Aggression. In R. E. Tremblay (Topic Ed.), *Encyclopedia of Early Childhood Development: Aggression* (pp. 29-34). Margaret and Wallace McCain Family Foundation.
- Martens, B. K., Witt, J. C., & Elliot, S. N. (1985). Teacher Judgments Concerning the Acceptability of School-Based Interventions. *Professional Psychology: Research and Practice, 16*, 191-198. <https://doi.org/10.1037/0735-7028.16.2.191>
- McGinnis, E., & Goldstein, A. P. (1990). *Skillstreaming in Early Childhood*. Research Press.
- Menzies, H. M., & Lane, K. L. (2011). Using Self-Regulation Strategies and Functional Assessment-Based Interventions to Provide Academic and Behavioral Support to Students at Risk within Three-Tiered Models of Prevention. *Preventing School Failure: Alternative Education for Children and Youth, 55*, 181-191. <https://doi.org/10.1080/1045988X.2010.520358>
- Olive, M. L., & Franco, J. H. (2008). (Effect) Size Matters: And So Does the Calculation. *Behavior Analyst Today, 9*, 5-10. <https://doi.org/10.1037/h0100642>
- Olive, M. L., & Smith, B. W. (2005). Effect Size Calculations and Single Subject Designs. *Educational Psychology, 25*, 313-324. <https://doi.org/10.1080/0144341042000301238>
- Reed, D. D. & Azulay, R. L. (2011). A Microsoft Excel 2010 Based Tool for Calculating Interobserver Agreement. *Behavior Analysis in Practice, 4*, 45-52. <https://doi.org/10.1007/BF03391783>
- Scruggs, T. E., & Mastropieri, M. A. (1988). Synthesizing Single Subject Studies: Issues and Applications. *Behavior Modification, 22*, 221-242. <https://doi.org/10.1177/01454455980223001>
- Smith, S. W., Lochman, J. E., & Daunic, A. P. (2005). Managing Aggression Using Cognitive-Behavioral Interventions: State of the Practice and Future Directions. *Behavioral Disorders, 30*, 227-240. <https://doi.org/10.1177/019874290503000307>
- Sukhodolsky, D. G., Smith, S. D., McCauley, S. A., Ibrahim, K., & Piasecka, J. B. (2016). Behavioral Interventions for Anger, Irritability, and Aggression in Children and Adolescents. *Journal of Child and Adolescent Psychopharmacology, 26*, 58-64. <https://doi.org/10.1089/cap.2015.0120>
- Test, J. E., & Cornelius-White, J. H. D. (2013). Relationships between the Timing of Social Interactions and Preschoolers' Engagement in Preschool Classrooms. *Journal of Early Childhood Research, 11*, 165-183. <https://doi.org/10.1177/1476718X12466217>

## Appendix A: Recording Sheet for Observations

Observer:

Date:

Student ID:

Time:

Observer will collect 20 minutes of observation data utilizing 15-second partial-interval recording for the following target behaviors. To gauge the severity of the behaviors, every 5<sup>th</sup> interval will include a peer observation.

Target Behavior A:

*Engaged Classroom Behavior:* Any instance in which the student appropriately requests attention from adults or peers. This includes verbalizing wants or needs from adults and peers, engaging in cooperative play with peers, and engaging in conversations with adults or peers. This does not include disruptive behaviors such as: screaming, hitting, or throwing objects.

Target Behavior B:

*Disruptive Classroom Behavior:* Any instance in which the student requests attention from adults or peers by using inappropriate physical contact, verbal actions, or ignoring an adult when asked to perform a task. This includes screaming, grunting or hitting other to gain attention, pointing to objects instead of verbalizing, throwing/banging objects, or grabbing objects from peers to initiate play. This does not include throwing objects when playing with peers (ex: throwing a ball).

0:00-0:15	0:15-0:30	0:30-0:45	0:45-1:00	1:00-1:15	1:15-1:30	1:30-1:45	1:45-2:00
PRA	PRA	PRA	PRA	PRA	PRA	PRA	PRA
NRA	NRA	NRA	NRA	NRA	NRA	NRA	NRA
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2:00-2:15	2:15-2:30	2:30-2:45	2:45-3:00	3:00-3:15	3:15-3:30	3:30-3:45	3:45-4:00
PRA	PRA	PRA	PRA	PRA	PRA	PRA	PRA
NRA	NRA	NRA	NRA	NRA	NRA	NRA	NRA
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4:00-4:15	4:15-4:30	4:30-4:45	4:45-5:00	5:00-5:15	5:15-5:30	5:30-5:45	5:45-6:00
PRA	PRA	PRA	PRA	PRA	PRA	PRA	PRA
NRA	NRA	NRA	NRA	NRA	NRA	NRA	NRA
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6:00-6:15	6:15-6:30	6:30-6:45	6:45-7:00	7:00-7:15	7:15-7:30	7:30-7:45	7:45-8:00
PRA	PRA	PRA	PRA	PRA	PRA	PRA	PRA
NRA	NRA	NRA	NRA	NRA	NRA	NRA	NRA
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8:00-8:15	8:15-8:30	8:30-8:45	8:45-9:00	9:00-9:15	9:15-9:30	9:30-9:45	9:45-10:00
PRA	PRA	PRA	PRA	PRA	PRA	PRA	PRA
NRA	NRA	NRA	NRA	NRA	NRA	NRA	NRA
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**Continued**

10:00-10:15	10:15-10:30	10:30-10:45	10:45-11:00	11:00-11:15	11:15-11:30	11:30-11:45	11:45-12:00
PRA	PRA	PRA	PRA	PRA	PRA	PRA	PRA
NRA	NRA	NRA	NRA	NRA	NRA	NRA	NRA
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12:00-12:15	12:15-12:30	12:30-12:45	12:45-13:00	13:00-13:15	13:15-13:30	13:30-13:45	13:45-14:00
PRA	PRA	PRA	PRA	PRA	PRA	PRA	PRA
NRA	NRA	NRA	NRA	NRA	NRA	NRA	NRA
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14:00-14:15	14:15-14:30	14:30-14:45	14:45-15:00	15:00-15:15	15:15-15:30	15:30-15:45	15:45-16:00
PRA	PRA	PRA	PRA	PRA	PRA	PRA	PRA
NRA	NRA	NRA	NRA	NRA	NRA	NRA	NRA
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16:00-16:15	16:15-16:30	16:30-16:45	16:45-17:00	17:00-17:15	17:15-17:30	17:30-17:45	17:45-18:00
PRA	PRA	PRA	PRA	PRA	PRA	PRA	PRA
NRA	NRA	NRA	NRA	NRA	NRA	NRA	NRA
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18:00-18:15	18:15-18:30	18:30-18:45	18:45-19:00	19:00-19:15	19:15-19:30	19:30-19:45	19:45-20:00
PRA	PRA	PRA	PRA	PRA	PRA	PRA	PRA
NRA	NRA	NRA	NRA	NRA	NRA	NRA	NRA
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

## Appendix B: Visual Presentation of Calming Cards for Role Play and Practice

- 1) Rapport building activity! (5 - 10 minutes);
- 2) Introduction to skill;
- Today we are going to work on calming our bodies! There are three steps to follow when we are calming down. *Point to poster with the steps.*



- Step 1: Stop



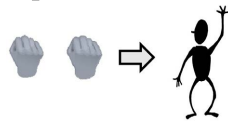
- Step 2: Think about how you are feeling



- Step 3: Pick a strategy to help you calm down from calm down cards
- 3) Model skill with relevant example to student;
  - 4) Have the student think of an example and guide through steps;
  - 5) Practice with activities.



**Activity 1: Explain each calming strategy and have the children practice. Repeat this for each strategy 1-2X.**



- Strategy 1: Squeeze and leave
- Form your hands into fists.
- Count to five and relax your hands. *Count with them.*
- Repeat this 5 times.



- Strategy 2: Blow out candles
- Make a fist with your hand.
- Count each finger (candle) as you put them up. *Count with them.*
- Blow out each candle with a long breath.
- Curl your finger down slowly while you are blowing.



- Strategy 3: Tell an adult your feelings
- Walk up to an adult.
- Tell the adult you would like to talk about how you are feeling.

1 2 3 4 5  
6 7 8 9 10

- Strategy 4: Count it out
- Count slowly to 10. *Count with them.*
- Take deep breaths as you count.



- Strategy 5: Walk to a calm spot
- Walk away from the situation/what is making you mad.
- Go to calm down spot in classroom.
- Sit in calm down spot until body is calm and you feel ready to go back and play.



- Strategy 6: Hide in your shell
- Sit on the ground/couch and bring knees into chest and squeeze your arms around legs.

- Relate this to “curling up in turtle shell”.
- Repeat as needed.



- Strategy 7: Put your hands away
- Sit still and fold your hands.
- Have a safe body to calm down.
- Can read safe body social story.



- Strategy 8: Push away mad feelings:
- Push toes into ground hard.
- Feel mad feelings leave your body through the floor.
- Have the student focus on the feeling leaving body as feet are pressed into the ground.