# Animatronic Fictional Service Dog and Play-Based Digital Resources Impact Attachment and Self-Regulation Among Early Learners with Severe Behavioral Challenges: An Exploratory Pilot Study

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Poster presented at the Society for Prevention Research Conference May 2022

#### Abstract

Research has indicated that children exhibiting severe, disruptive behavior are at elevated risk for an array of negative life outcomes. This pilot study was conducted to evaluate initial impacts of a technology-enabled intervention called Bouncy, on early learners' classroom-based, disruptive behavior. Breathing Bouncy, an animatronic plush service dog, is an attachment figure offering children training in self-regulation skills through modeling, direct instruction, and play-based learning opportunities. The program includes digital and physical supplemental materials. Following 12 weeks of intervention, children who had been chronically disruptive demonstrated a co-regulating relationship with Bouncy, increased ability to slow breathing on demand, and were able to transfer self-regulation skills in real-time to meltdown situations. Reductions in problem behavior followed, freeing up substantially more time for instruction.

# Background

Chronic, severe, disruptive behavior among PreK and K students interferes with their and their peers' learning, and stresses teachers. Children with Special Education classifications are over-represented in this group. Without remediation, these behaviors become barriers to school and life success. Secure emotional attachment and self-regulation skills are important protective factors. Plush dogs are surrogate attachment figures. Service dogs are culturally assigned protectors and helpers. Skill building in self-regulation is developed through modeling, direct instruction, guided practice and play-based learning opportunities. Bouncy, a fictional, tech-enabled, breathing, plush service dog, offers a secure relationship and provides systematic self-regulation training. Could a play-based approach that centers a fictional, tech-enabled service dog as a source of emotional support, as well as a model and facilitator of self-regulation training, have a positive impact on severely disruptive behavior? Could children transfer new self-regulation skills in real time to "meltdown" situations?

### Methods

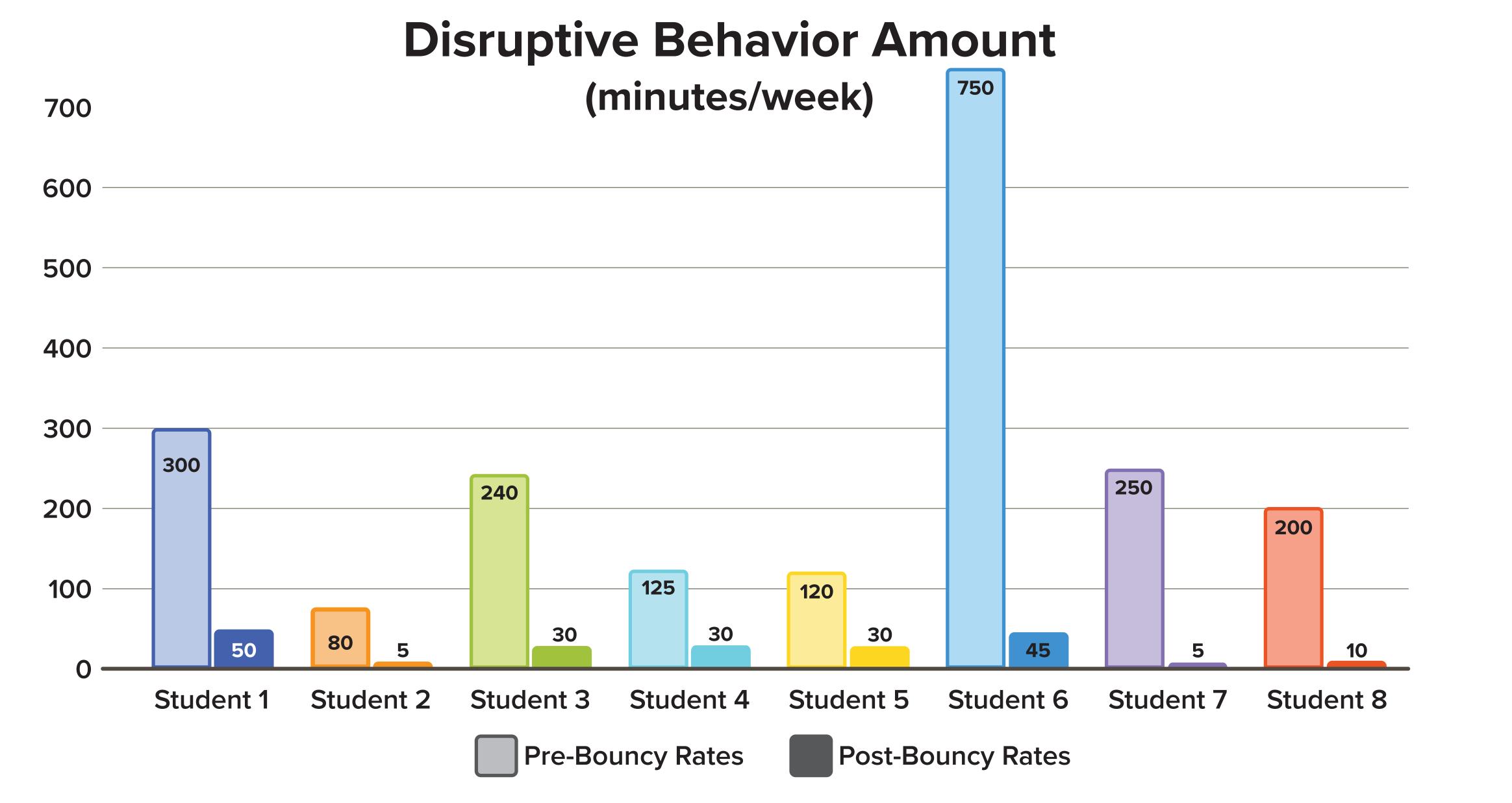
A single subject design, mixed method (narrative + time series), exploratory pilot study involved eight, multiracial, 3- to 6-year-olds; five from a working-class suburb, and three from a low SES, rural community. All except one had a special education classification; all exhibited frequent and severely disruptive behaviors. In all cases Bouncy and "Bouncy Breathing" was introduced and practiced daily with the whole class in the context of group circle. Opportunities were provided for individual students to self-direct use of Bouncy for self-soothing and breath practice, as well as playing with and caring for Bouncy. Before and after exposure to Bouncy, teachers completed observational surveys about their students' self-regulation skills (breath regulation) and disruptive behavior (frequency and duration of "meltdowns). They also recorded their own experience and were interviewed by researchers who compiled results.

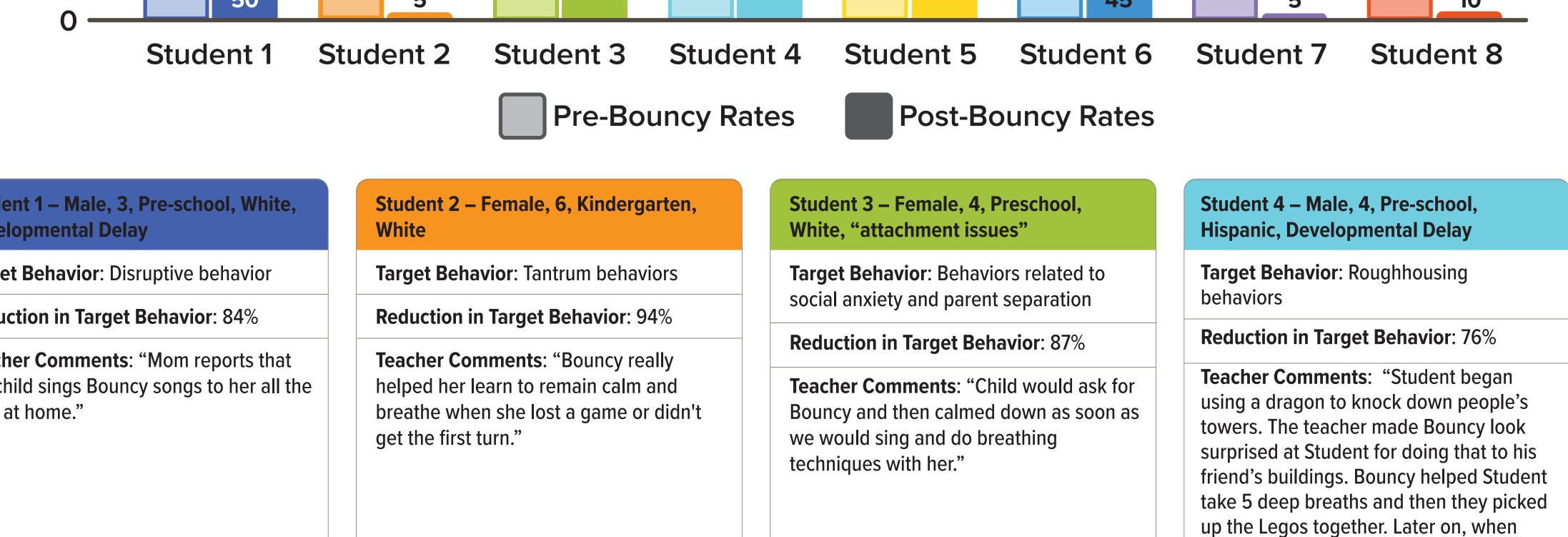
#### Results

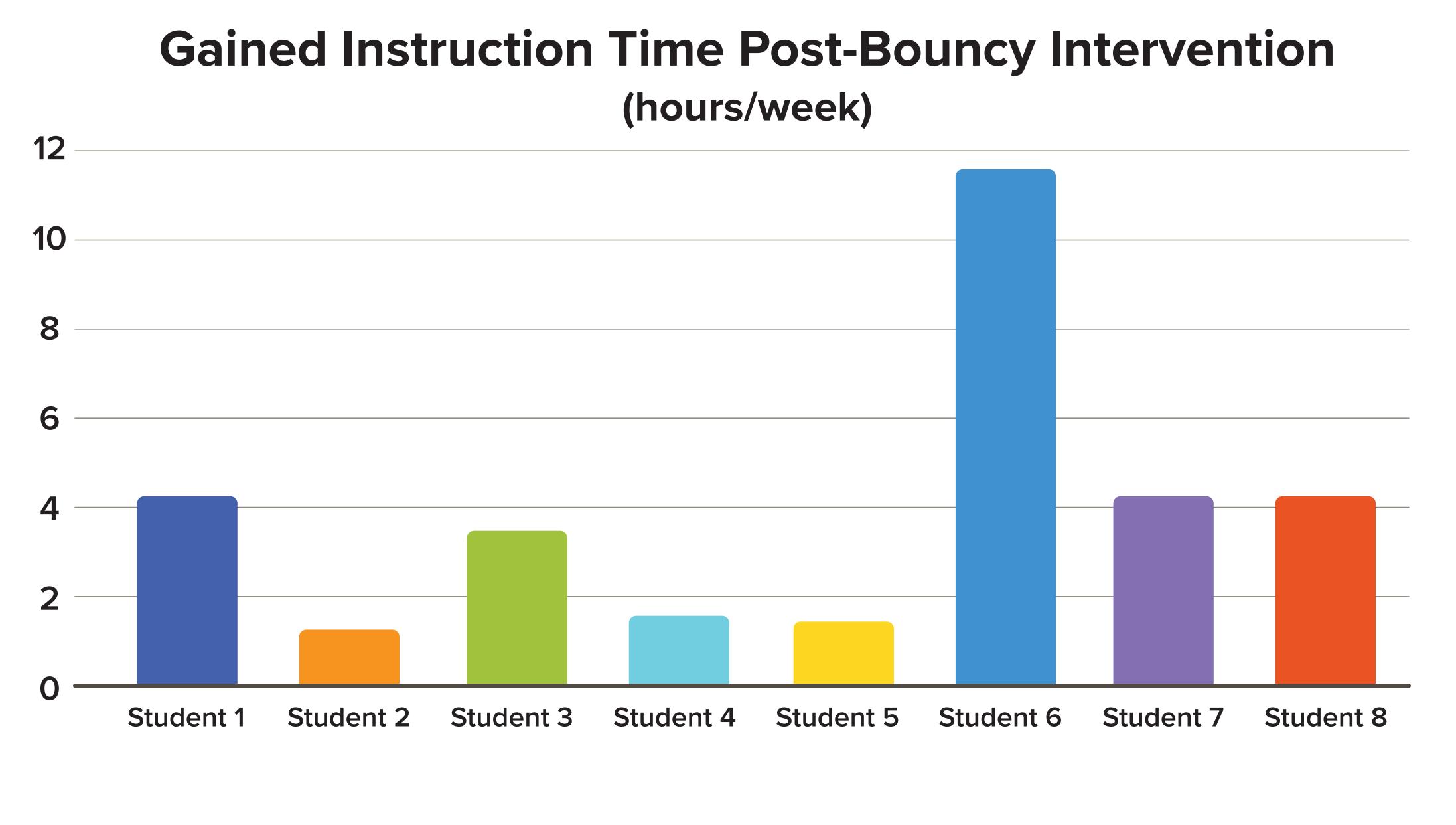
#### From pre- to post- intervention:

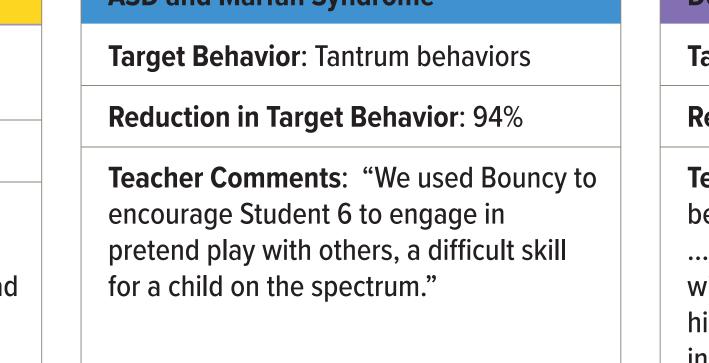
- . Students demonstrated increased mastery of breath regulation skills over time
- 2. Teachers reported substantial reductions in severe disruptive behavior
- 3. Net result was more available instruction time for both students and teachers

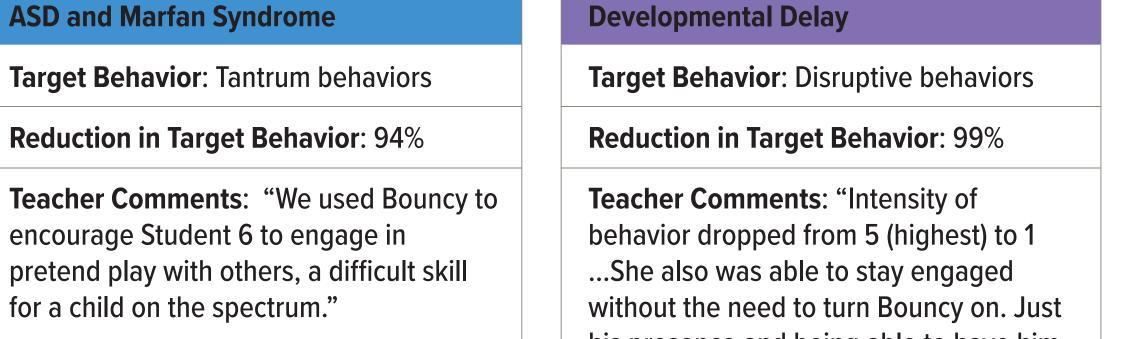


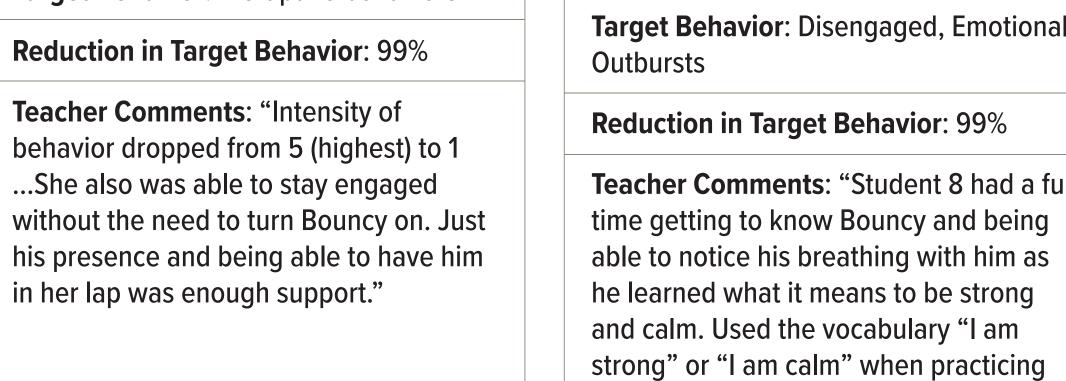












independently during centers."

## Conclusion

again, he looked at Bouncy first, and the

**Apraxia and Social Anxiety** 

**Reduction in Target Behavior: 75%** 

Teacher Comments: "When he star

feeling anxious he will grab Bouncy to

not met Bouncy what he does. This i

from a child who has severe social

Strong early results indicate Bouncy can be an effective skill building tool to help reduce disruptive behaviors in young children. Without larger numbers, a matched comparison group, a standardized measure for behavioral observations, and longitudinal studies, no causal link between the intervention and outcomes can be substantiated. Given the potential of scalable, life-altering positive impacts on children, more research is clearly warranted and has begun.