

USING POSITIVE REINFORCEMENT TO INCREASE ATTENTIVE BEHAVIOR AND CORRECT TASK PERFORMANCE IN PRESCHOOLERS DURING EXTRA CURRICULAR ACTIVITIES

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Abstract This study researches the effects of attentive behavior in preschool-aged children on the correct task performance during an extra curricular activity. An increase in attentive behavior, by use of a positive reinforcer, is viewed as the precursor to correct task performance by preschool-aged children. Using a positive reinforcer for preschool-aged children is thought to show an increase in attentive behavior. Thus, an increase in attentive behavior is thought to show an increase in correct task performance during an extra curricular activity. A sample of three, four-year olds were observed during a baseline phase and intervention phase over a period of four months. A multiple baseline design was used to measure both the subjects' attentive behavior and their correct task performance. These subjects were observed through a partial-interval system: ten-minute sessions, broken down into fifteen-second intervals. Results showed an increase in attentive behavior when children received a positive reinforcer, sticker sheet intervention. As attentive behavior increased, so did the amount of correct task performance during an extra curricular activity. These findings show that when children's attentive behavior is reinforced in a positive manner, children will show an increase in attentive behavior. The findings also show that when children's attentive behavior is increased, their correct task performance during an extra curricular activity also increases.

Keywords: attention, preschool, positive reinforcement, teacher action research

Introduction

There is recognition in the field of early childhood that increased use of technology has had a negative impact on the attention of young children (Weiss, Baer, Allan, Saran & Schibuk, 2011). In Bandura's sociocultural theory, he suggests that attention is one of four required necessary component for learning to occur (Bandura, 1977). Similarly, Vygotsky's social learning theory spoke about the benefits of social interaction as it relates to the acquisition of new skills (1980). Children can benefit from interaction with a *more knowledgeable other* (MKO), which Vygotsky defined as anyone who has a better understanding or ability with respect to a particular task, which could be a coach or another more advanced student. Children who pay attention can benefit from the direct instruction provided by the gymnastics coach, but also from the MKO through observations of peers. The identified problem in this study was the children's lack of attention to the gymnastics coach and the other students in the class while they were waiting to perform tasks at the various stations within the gymnastics class. The focus of this study was to determine if children in an extracurricular gymnastics program might benefit from an intervention aimed at increasing their attention to tasks.

Literature Review

Attention is defined as, "developmentally and contextually appropriate behavior reflected by visual fixation, manipulation, vocalization, approach, or affect" (de Kruif, McWilliam, Ridley, & Wakely, 2000, p. 254). For a child to learn appropriate skills, he must be focused on what is important and screen out or ignore distractions (Boersma & Das, 2008). The National Center for Early Development and Learning reports that 46% of kindergarten teachers identified more than one half of the children in their classes as lacking the self-regulatory skills and social competencies to function productively and learn in kindergarten (Rimm-Kaufman, Pianta, & Cox, 2000; Webster-Stratton, Reid, & Stoolmiller, 2008). "The inability to attend impacts a child's ability to learn new skills from peers, the teacher, and materials in the environment," (DiCarlo, Pierce, Baumgartner & Harris, 2012, p.1), therefore making the development of attention an important task for children.

As children grow and develop, attention progresses and becomes more advanced (Miller, 2011). In early childhood positive reinforcement and scaffolding of attention from an adult will assist in a child's ability to developing attention (Berk, 2012). Attention is the first of four steps that Bandura proposed in his social learning theory (1989). In order for children to learn, they must attend to verbal directions and also observe the actions of others. Therefore, for children to benefit from gymnastics instruction, they must attend to the instructor's behavior. The goal of this research study was to determine if positive reinforcement of targeted attentive behaviors would increase accurate performance of tasks during gymnastics class.

Methodology

Subjects. The subjects for this study were three 4-year-old children (pseudonyms Vicki, Sally and Walter) enrolled in a preschool gymnastics class who had a difficult time paying attention during gymnastics class. The subjects were assessed using the Ages and Stages Questionnaire (Bricker & Squires, 1999). The Ages and Stages Questionnaire is a parent-completed screening tool designed to help parents check their child's development across communication, problem solving, fine motor, gross motor and personal-social skills. All children were determined to be functioning within the normal limits for their chronological age.

Setting. The setting for this research study was at a private gymnastics complex. Each class was one-hour in duration and consisted of five to seven children with one teacher. During each class period, the children participated in different events: warm-up (stretching), floor, bars, vault, miniature trampoline, rope, foam pit, and trench. Children stayed at each event for approximately ten minutes and rotated through the events when instructed.

Behavior Definitions. In order to determine the relationship between child attention and correct task performance, data were collected on child attention, inattention, and task performance.

- *Attentive behaviors.* Attentive behaviors were defined as those behaviors that led to successful completion of events during gymnastics class. The first attentive behavior was *waiting (W)*. This indicated a child waited for their turn/sat or stood in spot designated by instructor. The second attentive behavior was *taking turn (TT)*. This indicated that a child took their turn on the specific activity without instruction. The third attentive behavior was *looking (L)*. This indicated that the child looked at the instructor when directions were being given or at other classmates who performed tasks. The fourth and final attentive behavior was *proper equipment (PE)*. This indicated that the child used equipment identified for a specific activity.
- *Inattentive behaviors.* Inattentive behaviors were defined as those behaviors that hinder or distract from ones' ability to successfully perform the events of gymnastics class. The first inattentive behavior was *running (R)*. This indicated that children ran around the gym/specific area, and/or were not sitting/standing in the area designated by the instructor. The second inattentive behavior was *out of turn (OT)*. This indicated that the child did not wait for his turn moving ahead of other children. The third inattentive behavior was *not looking (NL)*. This indicated that children were not looking at the instructor when instructions were being given, or looking at classmates who performed specific tasks. The fourth and final inattentive behavior was *improper equipment (IE)*. This indicated that the children touched equipment not permitted during gymnastics class.
- *Task performance.* Task performance was defined as the outcome the child produced once their turn was complete. The first task performance behavior was

performed correctly (PC). This indicated that the opportunity existed for the child to perform and the child performed the specific task correctly. The second task performance behavior was *opportunity presented (OP)*. This indicated that the opportunity to perform the task was presented, but the child did not complete the task correctly. The third and final task performance behavior was *no opportunity (NO)*. This indicated that there was no opportunity for the child to perform the task.

Observation Procedure. Data were collected through video recordings, in an unobtrusive manner, so as to not disrupt the gymnastics class. Subjects attended gymnastics class once a week, for an hour. During this hour, three different sessions were conducted. Ensuring that the events remained constant throughout the duration of the study ensured stability of results. Data were collected over a four-month period across both baseline and intervention.

Baseline. Baseline data were collected during typical gymnastics class conditions. Children moved through the gymnastics events and behaviors were observed during that period. For this study, three events were targeted for observation: warm-up, floor, and bars. These three events were chosen because they were mandatory in the gym class schedule; the other events were chosen by the teacher and varied each gymnastics class period.

Each event was set up prior to class time and children went through the different activities at each event in a rotational sequence. For warm-up, there were carpet squares placed on the floor in the shape of a circle. Children came to this event first, and were able to choose a carpet square where they would stretch for the ten-minute warm-up period. A teacher instructed children on what stretches to perform, and children were to follow the specific directions. Next, the floor event was set up with a mat to practice forward rolls, a raised beam to practice walking, a second mat to practice back-rolls, a bouncy surface to practice jumps, and finally a flat beam to practice walks again. Finally, the bar station was set up with a pit for children climb through, a series of circles for children jump through, a bar where children practiced back or front flips, and an area of blank wall where children practiced their hand-stands.

Sticker sheet intervention. The intervention utilized in this research study was a positive reinforcement method using a sticker sheet to keep track of children's progress during gymnastics class. The Sticker Sheet Intervention was introduced to each class before instruction began. Children received a card with their name and the date across the top. The three events: warm-up, floor, and bars, were located in a column on the left hand side of the card. Across the top of the card (under the child's name and the date), the attentive behaviors (look at teacher, wait for turn, listened to directions, and performed skill) were listed along with a space labeled, *Stickers Earned*. Each child was handed a card and they were also shown the stickers they were working toward at the beginning of class. All the

children were reminded of the attentive behaviors they were to display, and told that in order to earn a sticker for that event, they must receive at least three check marks (80% attentive behavior) in three of the four behavior columns. Children would leave their card in a designated space indicated by the teacher, while they performed their tasks at each given event. As children left the event, they would collect their card, receive check marks in the proper place, and stickers were distributed accordingly.

Figure 1. Sticker sheet intervention apparatus used as positive reinforcement of attentive behavior.

Name:					
Date:					
	Look at Teacher	Wait for Turn	Listed to Directions	Performed Skill	Stickers Earned
Warm-Up					
Floor					
Bars					

Data Collection. Interval recording was used to continuously score child behavior from the videotapes across the three events (warm-up, floor, and bars). Each session was ten minutes in duration divided into 15-second intervals. The recording sheet was broken into boxes where four attentive behaviors and four inattentive behaviors were listed. Data was collected for each subject over a baseline phase and an intervention phase. All behaviors were scored on a partial interval basis, with the exception of no opportunity, which was scored on a whole interval basis. Consistent with guidelines set forth by the *What Works Clearinghouse on Single Case Design* (Kratochwill, Hitchcock, Horner, Levin, Odom, Rindskopf, & Shadish, 2010) each subject's phases differed in duration and had a "minimum of 5 data points"; intervention was implemented when baseline levels of behavior documented a "need for change" and were stable (p. 19).

Experimental Design. For this research study, a multiple-baseline design across subjects was used to document the children's attentive behavior in response to the sticker sheet intervention. Kazdin (2011) defines this method as, "examining performance across several different baselines," (p.144). Reactive experimental arrangements, a threat to external validity, were addressed by ensuring the subject's behaviors were videoed in a discrete manner. The camera was never placed/held in their direct line of sight.

Interobserver Agreement. Interobserver agreement was calculated on “20% of the observation sessions” across the baseline and intervention phases (Kratochwill, et al., 2010, p. 15). Point-by-point agreement was calculated by dividing the number of agreements, by the number of agreements plus disagreements, and multiplying the product by one hundred to determine occurrence, non-occurrence, and overall reliability. The standard agreement should be a minimum of 80% (Kratochwill, et al). Occurrence reliability for attentive behavior was 94% (range, 82-97%). Non-Occurrence reliability for attentive behavior was 90% (range, 82-96%). Overall reliability for attentive behavior was 97% (range, 93-98%). Occurrence reliability for correct task performance was 94% (range, 83-100%). Non-Occurrence reliability for correct task performance was 88% (range, 80-100%). Overall reliability for correct task performance was 96% (range, 90-100%).

Results

Each of the three subjects of this research study had a difficult time paying attention during gymnastics class. In efforts to increase attentive behavior, the behaviors that must be displayed in order to successfully travel through the events of gymnastics class; a positive reinforcement intervention was implemented. It was believed that once that as the display of attentive behaviors increased, correct task performance would also increase.

Attentive Behavior. Vicki’s baseline data for attentive behavior was 39% (range, 25-50%). Sally’s baseline data for attentive behavior was 48% (range, 43-66%). Walter’s baseline data for attentive behavior was 35% (range, 28-40%). Vicki’s intervention data for attentive behavior was 85% (range, 75-93%); this represents an increase of 46 percentage points. Sally’s intervention data for attentive behavior was 86% (range, 75-93%); this represents an increase of 38 percentage points. Walter’s intervention data for attentive behavior was 89% (range, 78-100%); this represents an increase of 54 percentage points.

Correct Task Performance. Vicki’s baseline data for correct task performance was 38% (range, 26-60%), when the sticker sheet intervention was applied her correct task performance was 77% (range, 67-85%); this represents an increase of 39 percentage points. Sally’s baseline data for correct task performance was 38% (range, 29-46%), when the sticker sheet intervention was applied her correct task performance was 83% (range, 68-92%); this represents an increase of 45 percentage points. Walter’s baseline data for correct task performance was 32% (range, 25-40%), when the sticker sheet intervention was applied his correct task performance was 87% (range, 71-100%); this represents an increase of 55 percentage points. It seems reasonable that as child attention increases that the number of opportunities for subjects to perform tasks correctly would increase because the children would move through events more quickly as a result of being on task. This may not be reflected in the collection of correct task performance because it was calculated on correct performance divided by opportunities presented.

Discussion

A child's ability to attend impacts his ability to learn from any environment (Bandura, 1989); therefore, instructors should investigate interventions that assist in increasing child attention. Consistent with previous research (Hattie & Timperly, 2007), this study demonstrated that children increased their attentive behavior when they received feedback in the form of the sticker sheet intervention. Furthermore, all children in their correct task performance made gains, which is consistent with previous research stating that children demonstrate a growth in task performance when children's attentive behaviors are positively reinforced (Lysakowski & Walberg, 1981).

Children's increased attention appeared noticeable to both parents and other gymnastics teachers, who remarked on children's ability to wait their turn, participate, and perform tasks correctly. Additionally, several parents reported that they noticed a difference in their child's confidence level. The intervention appeared to assist the children in paying attention, which led to better performance and possibly an increase in their confidence in their ability.

Clinical Implications

The present study supports the notion that "positively reinforced behaviors tend to be repeated" (Daft, 2017, p. 238). Positive reinforcement and scaffolding of attention by instructors and teachers will assist in a child's ability to develop their own attention (Berk, 2012); Ribot was the first to postulate "attention develops from the external to the internal" (Rieber, 1987, p. 158). This means that adults should support children's learning by identifying strategies to assist them in developing attentive behavior and providing feedback on their performance. Attention enhances a person's learning, developmental and academic, and their social skills, therefore playing a role in all aspects of life (Copple & Bredekamp, 2009).

Conclusion and Future Research

Future research should investigate the effects of the quality of teacher feedback on child behavior, in relation to child attention. In the present study, we did not record the content of the teacher's feedback; only the use of the sticker sheet intervention cards. More research can be done to observe teacher behavior, and the role it plays on child attentive behavior during extra-curricular activities, such as gymnastics.

As children progress through life, their attention becomes increasingly more developed (Miller, 2011). The results of this research study demonstrate that a sticker sheet

intervention was effective in increasing child attention, which had a positive affect on the target children's correct performance on specific gymnastics skills. This is a low labor-intensive intervention that was relatively simple to implement and may show positive effects in other similar occurrences.

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