PBS Goes to Middle School: Building Capacity of Peer Buddies to Implement a PBS Intervention with Fidelity

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Abstract

During adolescence, peer behavior is a strong stimulus that influences how students initiate and respond to their physical and social environment. Yet, the majority of school-based behavioral studies (Dunlap, Clarke, & Steiner, 1999) do not include peers as intervention agents. This study demonstrated how to include peers as contributing members of a Positive Behavior Support (PBS) team. Findings indicated that peers were able to implement a behavior support plan with fidelity, resulting in decreased challenging behavior and increased activity engagement in a middle school peer with Autism Spectrum Disorder (ASD).

Keywords Positive Behavior Support · Peer-Mediated Interventions · Behavioral Skills Training · Middle School · ASD · Fidelity

Introduction

Rooted in behavioral theory, Positive Behavioral Support (PBS) exemplifies the core values for targeting and reducing challenging behavior that impedes upon the effective completion of daily activities and routines, along with addressing improved quality of life and inclusion (Carr et al., 2002). Using evidence-based practices, long-term benefits can be achieved.

During adolescence, same age peers are considered highly valued in a young person's life and have a great impact on how students in middle school operate in daily activities. Yet, in the body of applied research, this factor is not often considered when planning durable and sustainable behavior support

plans. According to a literature review on Peer-Mediated Instruction and Intervention (PMII) (Sam & AFIRM Team, 2015), the inclusion of peers as intervention agents has been identified as an effective evidence-based approach with a variety of participants. PMII involves systematically teaching peers without disabilities ways to engage learners with disabilities in positive and meaningful social interactions (Chan et al., 2009; Lee, Odom, & Loftin, 2007). Although the field of intervention research has promoted the inclusion of PMII studies as an evidence-based practice for addressing challenging behavior and enhancing ecological validity, the specific procedures utilized to ensure effective implementation and positive outcomes have not typically been described. The purpose of this study was to demonstrate that typical peers in middle school could participate in the PBS process and implement a behavior support plan with fidelity to improve the behavior of a student with ASD.

General Procedures

Methods

Participant

Mia was a 13-year-old girl diagnosed with multiple disabilities including ASD and attended a special education classroom at a public middle school. Mia demonstrated a variety of strengths (i.e., social interactions, good gross motor skills) and

Utility of the work for clinicians:

1. Demonstrates the implementation of a multicomponent PBS plan at a middle school to decrease the challenging behaviors of a student with ASD
2. Illustrates how to build the capacity of adolescent peers to fulfill the role of primary intervention agent
3. Acknowledges and incorporates input from a same-aged peer group for a target student throughout all aspects of the PBS process
4. Provides a description of a systematic Behavioral Skills Training (BST) consisting of instruction, modeling, rehearsal, and feedback to teach peers to implement intervention strategies with fidelity

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was able to express some of her preferences (i.e., dancing, interacting with same age girls) at school. Her communication consisted of vocalizations, such as loud high pitch screams, and gestures that included physically leading and pointing along with challenging behavior (i.e., self-injurious behavior, property destruction, aggression).

Setting

The school routine targeted was Mia's daily physical education (PE) activity, which she participated in for 45 min daily. This routine was selected by Mia's PBS team, as it was consistently associated with high levels of challenging behavior. The PE activity involved Mia transitioning to the track area, walking the track, and then completing a physical activity (i.e., rolling balls, indoor bowling) within the locker room. Mia participated in the PE routine along with her five special education classmates and six "peer buddies" (i.e., typical students who assisted the PE coach with daily tasks). A PBS facilitator was also present for all sessions providing guidance in establishing a PBS team and completing the PBS process. The PBS facilitator was also responsible for conducting Behavioral Skills Training (BST). The BST involved teaching and coaching the peer buddies who operated as the primary intervention agents how to implement the intervention with fidelity. The facilitator was also responsible for coordinating all data collection.

Experimental Design

An (A-B-A-B) withdrawal probe design (Liebenberg, 1973) was used to evaluate the effectiveness of a peer-mediated PBS intervention on child behavior. The empirical design included a baseline phase, an initial intervention phase, a 2-day withdrawal probe, and then a return to a second intervention phase. Each session was conducted daily with a 2-day break prior to the first intervention phase in order to conduct the BST with the peer buddies.

Dependent variables. Direct observation measures were collected daily during the PE activity on Mia's *challenging behavior* and *engagement*. The first dependent variable, *challenging behavior*, was defined as any occurrence of self-injurious behavior, collapsing on the floor, physical resistance, aggression, property destruction, screaming, crying, and/or elopement. The second dependent variable targeted was *engagement*, defined as being on task and following the sequence of the task appropriately (i.e., walking independently on track, using materials appropriately, and following behavioral expectations of each subroutine). Each PE session was recorded via video, and dependent variables were scored and graphed before the next session. Data were collected using a 10-s continuous interval system and scored from video. Each 10-s interval was scored as an occurrence if the behavior was

observed within the interval. Engagement behavior was scored within each 10-s interval when Mia was engaged for at least 70% of an interval, as determined by observer judgment (Vaughn, Clarke, & Dunlap, 1997).

Intervention fidelity. Fidelity data were collected daily for each session across phases to determine adherence of intervention strategy implementation. Data were scored using a checklist of intervention components and scored via video. The fidelity checklist provided a task analysis of the behavior support plan and allowed for monitoring of each intervention step during sessions, with totals used to assist in pre-routine coaching.

Interobserver agreement. Interobserver agreement was assessed for 63% of all PE sessions across all conditions. PE sessions averaged 95% agreement (range 81–100%) for occurrence of challenging behavior and 96% (range 87–100%) for intervals with engagement. Procedural fidelity data were collected and coded for 95% of sessions across baseline and intervention phases. Total agreement always exceeded 93% (range 88–100%).

Social validation. Direct observation data were also collected on Mia's "positive affect" for each session. This behavior was recorded for any occurrence within a 10-s interval of Mia exhibiting smiling, laughing, dancing, and/or clapping. Total agreement for the reliability of "positive affect" averaged 93% (range 87–99%) for all PE sessions. In addition to this direct observation measure that documented outcomes, the peer buddies also completed a pre-post measure developed by the authors to gather peer buddy perception at the start and termination of the study. The 5-point scale (1—*very poor*, 2—*poor*, 3—*neutral*, 4—*good*, 5—*very good*) obtained ratings from peer buddies regarding Mia's relationships, behavior, progress in school, and level of "happiness."

Independent variable. The independent variable in this study was the implementation of the PBS process (Albin, Lucyshyn, Horner, & Flannery, 1996). The PBS process included establishing a PBS team, conducting a functional behavior assessment (FBA) and hypothesis development, and generating a behavior support plan linked to function. In addition, progress and outcome data were collected across all phases of the study in order to monitor the implementation process and to demonstrate causality.

Functional Behavior Assessment Process

All peer buddies were informed of the expectations and time commitments for serving as primary intervention agents prior to the initiation of the study. All six peers expressed interest in volunteering, and informed consent was obtained from their

parents and the school administrator. The FBA process was initiated by the PBS facilitator with the team in order to gather information about Mia, her daily routine along with her strengths and challenges. The team included Mia's mother, her teacher, the teacher's aide, the PE coach, her six peer buddies, and the PBS facilitator. Over the course of 4 weeks, information was gathered by way of interviews, direct observations, and a review of Mia's Individualized Educational Program (IEP) completed during her previous sixth grade school year. The Functional Assessment Interview (FAI) (O'Neill et al., 1997) is a structured interview, utilized to gain information about a target student's behavior and the circumstances in which the behavior does or does not occur. The FAI was completed with each adult and the peer buddies as a group. Direct observations were also conducted by the PBS facilitator during the target PE routine for ten consecutive school days. The FBA process confirmed that Mia's challenging behavior was intense and consistently occurred once the initial verbal instruction was presented to her to begin her PE routine.

Hypothesis Development

Following the assessment process, key variables were identified as common antecedents to Mia's challenging behavior. The team hypothesized that Mia would engage in challenge behaviors *in order to escape activities that were* (1) too difficult, due to her limited motor skills and medical complications, (2) lacked predictability, and/or (3) non-preferred. Using the outcomes of the FBA, a multicomponent intervention plan was developed.

Baseline

After the completion of the FBA process, a formal baseline was initiated for the PE routine. All staff and the six peer buddies were asked to continue their ongoing practices and interactions throughout each of the six baseline sessions. Table 1 describes all of the subroutines comprising the PE activity. Safety net procedures were initiated when Mia exhibited challenging behavior for more than 30 consecutive seconds.

Training and Coaching Peer Buddies to Implement Strategies

Once the first baseline phase of the study was completed, the PBS facilitator introduced a BST procedure over a 2-day period for the peer buddies. The goals for this 4-h training were to teach the peer buddies how to prepare for intervention implementation and identify what tasks and materials were needed for PE activity and how to implement the intervention strategies with fidelity. The specific techniques the PBS facilitator utilized for BST included the following: group

Table 1 Peer buddy intervention component steps

Prior to PE
1. Minimize distractions for 5 min
2. Give Mia a clear verbal cue that PE is beginning
3. Present a picture schedule and point out steps for PE
4. Assist putting on preferred character socks and shoes
During PE
5. Follow Mia's walking pace
6. Introduce a preferred activity for Mia during transition once she stands up
7. Interact and sing with her
8. Provide preferred item once Mia starts walking
9. Give Mia opportunity to change preferred toy
10. If Mia drops to the ground, move away until redirected
11. Provide attention, when Mia starts walking
12. Give Mia opportunity to get water at fountain
13. Give Mia verbal acknowledgement of what she is doing
14. Provide praise and attention throughout PE
15. Present a preferred activity at track area, in locker room, and in classroom
After PE
16. When exiting out of locker room, provide her with music, grab bag, and preferred transition toy
17. Praise Mia during walk back to class
18. Once in class, give her choice to continue water play or computer
19. Put away all PE materials away

discussion, rehearsal, modeling, role-play, and descriptive feedback (Sarokoff & Sturmey, 2004). Following the training, an additional 1-h discussion meeting was held for questions and additional clarification.

Following the BST and discussion, the first intervention session was conducted. At this point, pre-routine coaching began and occurred 10 min prior to the start of each intervention session. The pre-routine coaching procedure consisted of a check-in to confirm if the peer buddies wanted to participate in the PE activity that day. The pre-routine coaching procedures included a review of the intervention script and materials list, modeling brief, a role play activity, and delivery of feedback to the peer buddies based on the fidelity data scored from the previous intervention day. The intervention fidelity data were used as a guide by the PBS facilitator to address specific intervention strategies to target.

Intervention Phase I

Once the PE intervention phase was initiated, the PBS facilitator provided side-by-side verbal and gestural support to the peer buddies during the session as needed.

Withdrawal Phase

Following stabilization of the first 4 days of the intervention phase, 2 days of withdrawal probes were completed. This consisted of removing the components associated with the support plan and instructing the peer buddies to revert back to the baseline procedures and not implement any of the behavior support plan strategies.

Intervention Phase II

After 2 days of the withdrawal probe phase, the data indicated an increase in challenging behavior, at which point the second intervention phase was initiated. The return to intervention also included pre-routine coaching and continued fidelity data collection.

Results

Experimental Analysis

The changes in the dependent variables demonstrate that the PBS intervention was effective as displayed in Fig. 1. The data reflect that challenging behavior was lower during both intervention phases. Challenging behavior occurred as a mean of 69% (range 43–93%) of intervals across all activities during baseline and withdrawal probes. It was reduced to a mean of 13% (range 3–43%) during intervention sessions. Engagement during baseline averaged 36% (range 18–70%) for baseline and withdrawal sessions and then increased to a mean of 90% (range 60–98%) for intervention and generalization sessions.

Mia's social validation measures indicated that "positive affect" was exhibited at higher levels during intervention phases. The mean percentage of intervals with "positive affect" for PE activities increased from an average of 8% (range 0–27%), for all baseline and withdrawal sessions, to an increased mean of 26% (range 4–33%) during intervention phases.

The mean peer buddies' social validation documented higher perception ratings following intervention. Pre-post

ratings of the modified quality of life indicators included the following: "Friendships with her peers now are" which rose from a rating of 4 to 4.6; "Mia's relationships with her teachers" increased from 3.3 to 4.2; "general happiness" changed from a mean of 3.3 to 3.6; and ratings increased for "behavior is appropriate" 2.8 to 3.4.

Intervention Fidelity

Fidelity data were expressed as the percentage of strategy steps completed. The mean percentage of intervention strategies implemented during all baseline and withdrawal sessions was 22% (range 18–28%). For intervention phase data, the mean percentage was calculated at 91% (range 82–100%). The comparisons to baseline and intervention show a clear differentiation and association with causality in regard to implementation delivery and related outcomes.

Discussion

The current investigation demonstrated empirically that it is possible to use BST and coaching strategies to teach middle school students how to accurately deliver an FBA-based behavior support plan to a peer with special needs. The collection and use of fidelity data suggest that the multicomponent intervention plan had a direct relationship to improved outcomes for the target student.

Future research could focus on specific resources (i.e., money, effort, time) needed to successfully use BST to build the capacity of peer buddies who serve as intervention agents. It is also important to take into account the skill level of peers that are needed to fulfill the role of intervention agent and other peer-related variables such as the ability to work in teams, feedback responsiveness, rate each peer learns, and accurate demonstration of strategies.

A key limitation of the current study is the lack of external validity. This case study is one example of the application of PBS in a middle school, with a unique student, school community, and dedicated peers who became "friends."

Fig. 1 Percentage of intervals with challenging behavior, engagement, and positive affect during daily PE routine across all study phases

Consideration needs to be given about whether this type of study would be successful with different aged peers and/or populations. Replication and extension of this case study are necessary to further explore the potential benefits of peer-mediated interventions. Expansion of this case study may include exploring different populations of participants, different ages of students, and types of peers within the school environment to further explore other unrealized limitations and benefits.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in the case study with human participants described in submitted manuscript were conducted in accordance with the ethical standards and approval from an accredited University Institutional Review Board. In addition, all procedures were conducted in accordance with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study described in submitted manuscript. For human participants under the age of 18, informed consent was obtained from each child's parents.

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