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RESEARCH ARTICLE

Using Coaching and Performance Feedback to Increase Head Start Teachers' Use of Teaching Pyramid Model Practices

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The purpose of this study was to investigate the impact of individualized coaching and performance feedback on the implementation of Teaching Pyramid Model practices by three Head Start teachers. Participants were lead teachers in three preschool classrooms located in one Head Start program. During the intervention, teachers received weekly individualized coaching on Teaching Pyramid Model practices, followed by a weekly classroom observation and emailed performance feedback. All three teachers demonstrated increased implementation of Teaching Pyramid Model practices after the intervention was introduced. These results suggest that individualized coaching and performance feedback may support Head Start teachers' implementation of evidence-based practices that can enhance the social and emotional development of young children and address challenging behaviors in the classroom.

Keywords: Head Start, Coaching, Teaching Pyramid Model, Social-emotional Development

Social-emotional competence in young children is highly associated with long-term success in school (Fantuzzo et al., 2007) and throughout life (Jones, Greenberg, & Crowley, 2015). Social-emotional competence is defined as "a set of skills including self-regulation, self-concept, self-efficacy, and prosocial behaviors with teachers and peers" (Fantuzzo et al., 2007, p. 46). Evidence of the relationship between social-emotional competence and other developmental skills, such as cognitive and communication skills (Brown & Conroy, 2011), academic growth in reading and mathematics (McClelland, Acock, & Morrison, 2006), and later life outcomes (Denham et al., 2003; Jones et al., 2015; Moffitt et al., 2011) are well documented. However, many young children enter early childhood settings without the social and emotional skills necessary to succeed in the school environment. These children are more likely than their socially competent peers to exhibit challenging behaviors, receive negative attention from teachers (Strain, Lambert, Kerr, Stagg, &

Lenkner, 1983), be rejected by peers (Odom et al., 2006), and experience failure in school (Tremblay, 2000).

From an attachment theory perspective (Pianta, 1998), child-teacher interactions are crucial in the early years; and, the quality of early child-teacher relationships can be used as a predictor of children's social skills as older children (Howes, 2000). More recently, research findings demonstrate the critical role that supportive adult relationships and positive experiences have on building skills for resilience in young children (Center on the Developing Child at Harvard University, 2015). For these reasons, early childhood teachers must be competent in practices that build responsive relationships with young children, create supportive environments, and teach appropriate social and emotional skills that can support long term success and buffer against the effects of adverse experiences.

The *Teaching Pyramid Model* (Fox, Dunlap, Hemmeter, Joseph, & Strain, 2003) is one specific approach to Positive Behavior Intervention and Support (PBIS) that promotes these skills. This comprehensive model was designed to help teachers implement evidence-based practices that support social-emotional development in young children (Fox et al., 2003). It consists of three different levels of support: (1) tier 1 promotion (e.g., forming responsive relationships and creating supportive environments for all children in the early childhood setting), (2) tier 2 prevention (e.g., explicit instruction of social and emotional skills to target the development of needed skills in young children), and (3) tier 3 intensive intervention (e.g., individualized behavior support plans for children with persistent challenging behaviors).

Unfortunately, many early childhood teachers do not have the resources or training to implement evidence-based practices that are likely to support children's social-emotional competence (Branson & Demchak, 2011; Carter & Norman, 2010). One national study revealed 9.5% of preschool teachers in federally-funded programs reported having expelled at least one preschool child within 12 months, with African-American preschool children twice as likely to be expelled from preschool as Caucasian children (10.0 and 5.8 per 1,000, respectively), and more than five times as likely as Asian-American children (1.8 per 1,000; Gilliam, 2005). Recently released data from the Office for Civil Rights (OCR) confirms these patterns of preschool suspensions and racial disparity in preschool suspensions. Of the participating preschool programs, 6% reported having suspended a child at least once, with nearly 5,000 preschool children suspended during the course of a year. African-American children represented 42% of preschool children suspended while only representing 18% of children enrolled in preschool. Additional data from the OCR indicated these patterns of suspension and expulsion continue throughout K-12 school settings (US Department of Education Office for Civil Rights, 2014).

Although research findings indicate approximately 10% of kindergarten children exhibit challenging behaviors (Kupersmidt, Bryant, & Willoughby, 2000; West, Denton, & Germino-Hausken, 2000), there is particular concern about the social-emotional competence of children living in poverty. Children from low-income backgrounds may be at greater risk of developing significant challenging behaviors in comparison to the general population (Qi & Kaiser, 2003). In fact, about 46.5% of children living in poverty enter school with deficits in social-emotional competence, and over 20% enter school with significant challenging behaviors (Kaiser, Hancock, Cai, Foster, & Hester, 2000).

To support the development of children in poverty, Head Start was created to provide comprehensive services to young children and their families and, specifically, to promote the cognitive, social, and emotional development of children from low-income backgrounds (Administration for Children and Families, 2015). Many children and families receive services

through Head Start programs. During 2015-2016, more than 1,080,000 children were enrolled in Head Start, with more than 450,000 preparing to enter school (Office of Head Start, 2017). Prior research suggests, though, that increasing numbers of children in Head Start programs display challenging behaviors (Eberhart-Wright, 2002, as cited in Snell, Berlin, Voorhees, Stanton-Chapman, & Hadden, 2012a), with externalizing behaviors the most prominent challenging behavior identified by Head Start teachers (Snell et al., 2012b). Furthermore, it is suggested not all children with behavioral difficulties receive services that meet their behavioral needs in Head Start programs (Qi & Kaiser, 2003).

Although Head Start requires in-service teachers to attend a minimum of 15 hours of professional development every year (Improving Head Start for School Readiness Act, 2007), reports from Head Start teachers reveal that they are often overwhelmed by not being equipped to handle challenging behaviors in the classroom (Domitrovich et al., 2009; Driscoll & Pianta, 2010). Challenging behaviors likely contribute to increased stress (Friedman-Krauss, Raver, Neuspiel, & Kinsel, 2014), and classroom staff need more training related to classroom management and behavioral support (Snell et al., 2012a). These statements are consistent with the findings of Quesenberry, Hemmeter, and Ostrosky (2011) who investigated six Head Start programs through interviews and document analysis. The researchers found that all six Head Start programs scored poorly on both teaching social-emotional skills and supporting children with challenging behaviors in the classroom. To address such concerns, Whittaker and Harden (2010) suggested Head Start teachers may particularly benefit from supports such as training, observations, feedback, and consultation related to implementing behavior support strategies and classroom interventions. Further, it is possible that training Head Start teachers in the use of evidence-based practices may increase their capacity to promote appropriate social and emotional development at a universal and targeted level, and prevent the development of persistent challenging behaviors in some children.

Providing teachers with ongoing individualized support with feedback on their implementation of evidence-based practices has more lasting effects than a one-day workshop (Wayne, Yoon, Cronen, Zhu & Garet, 2008). Teacher consultation (e.g., Benedict, Horner, & Squires, 2007; Carter & Norman, 2010) and coaching (e.g., Fox, Hemmeter, Snyder, Binder, & Clarke, 2011) are models of individualized supports for preschool teachers examined in the literature. Teacher consultation is used to help teachers improve their skills to support children with challenging behaviors. In this model, a consultant provides a teacher with the strategies needed to improve the classroom arrangements, as well as teaching practices to promote the social-emotional competence of children (Dougherty, 2000). Consultation is shown to increase preschool teachers' implementation of PBIS universal practices in the classroom (Benedict et al., 2007; Carter & Norman, 2010), practices that are likely to promote appropriate development of social-emotional skills. Coaching is another model found to increase teachers' use of evidence-based practices (Kretlow & Bartholomew, 2010). In preschool settings, coaching in combination with other strategies can improve teacher-child interactions (Zan & Donegan-Ritter, 2014) and the implementation of *Teaching Pyramid Model* practices (Fox et al., 2011).

Fox and colleagues (2011) investigated the effects of teacher coaching and performance feedback on the implementation of *Teaching Pyramid Model* practices by three public preschool teachers. The researchers provided each teacher with individualized coaching based on their scores from the *Teaching Pyramid Observation Tool* (TPOT; Hemmeter, Fox & Snyder, 2014). The results of this study suggested a functional relation between teacher coaching and performance feedback and teachers' implementation of *Teaching Pyramid Model* practices. However, the study did not provide data on the behavioral outcomes of children.

Similarly, Godfrey-Hurrell, Correa, & Truesdell (2018) investigated the effects of teacher coaching and performance feedback on the implementation of *Teaching Pyramid Model* practices by three private preschool teachers. Findings suggested teachers increased their levels of implementation and demonstrated a positive view of the coaching model. To our knowledge, these are the only studies that have examined the effects of coaching and feedback on teachers' use of *Teaching Pyramid Model* practices.

Due to the paucity of studies examining the effects of teacher coaching on the implementation of *Teaching Pyramid Model* practices, and due to the existing need to support Head Start teachers, the purpose of this study was to examine the effects of coaching three Head Start teachers on their use of *Teaching Pyramid Model* practices in the classroom. Additionally, we intended to measure the effects of teacher coaching on social interactions within the classroom. We specifically addressed the following research questions:

(1) What is the impact of coaching and performance feedback on Head Start preschool teachers' use of *Teaching Pyramid Model* practices in the classroom?
(2) What is the impact of teacher coaching and performance feedback on social interactions in the classroom?

METHODS

Participants

Lead teachers in a Head Start preschool classroom who had no prior formal training in the *Teaching Pyramid Model* that exceeded a one-day training session were eligible to participate in this study. A purposive sampling procedure was used to recruit interested teachers through the administrator of a Head Start program with whom the researchers had an existing relationship. The study included three Head Start classroom lead teachers who were interested in receiving training related to promoting the social-emotional competencies of children, as well as preventing challenging behaviors in the classroom. A signed written notice of informed consent was obtained from each participating teacher. Parental consent was not needed as the researchers did not collect data on specific target children.

The first teacher, Hellen (pseudonym), was an African American female with a Bachelor's degree in Early Childhood Education. She had 25 years of experience working with young children in an early childhood setting. Hellen had 17 children, ages 4 and 5 years old, in her classroom. All the children in her classroom were reported to be African American.

The second teacher, Joey (pseudonym), was an African American female with a Bachelor's degree in Child Development and Family Studies and a Master's degree in Family and Community Services. She had six years of teaching experience in early childhood settings. Joey had 17 children, ages 4 and 5 years old, in her classroom. All the children in her classroom were reported to be African American.

The third teacher, Sharon (pseudonym), was an African American female with a Bachelor's degree in Sociology and a Master's degree in Business. She had 12 years of experience working in an early childhood setting. Sharon had 17 children, ages 4 and 5 years old, in her classroom. All the children in her classroom, except two who were biracial, were reported to be African American.

Setting

The study took place at a Head Start program located in an urban neighborhood in the southeastern United States. The program had a total of three preschool classrooms serving 51 children between the ages of 4 and 5 years old who were predominately (94%) African American. The classrooms operated as a half-day program starting at 7:45 a.m. and ending at 1:45 p.m. five days per week. Each classroom had a lead teacher and a teaching assistant. Classrooms included children with and without disabilities. All teachers and teaching assistants in this program were African American. Observations took place in each of the teachers' classrooms. Coaching sessions took place in a separate room within the preschool building.

Measures

Teaching Pyramid Observation Tool. The TPOT for Preschool Classrooms was used to measure each teacher's implementation of teaching practices associated with the *Teaching Pyramid Model*, and to identify potential areas of needed improvement for each teacher. Developed by Hemmeter and colleagues (2014), the TPOT is a rating scale completed by a trained observer during a two-hour classroom observation of a teacher in an early childhood educational setting, followed by an individual interview with the teacher with questions connected to the practices of the *Teaching Pyramid Model* that may not be able to be clearly observed in the classroom (e.g., practices related to supporting families, involvement in behavior support plans, teacher's selection of teaching strategies and materials, approaches to individualizing instruction).

The TPOT consists of 141 indicators that are organized into three main subscales: (a) indicators of 14 key practice areas related to universal practices and targeted teaching practices, (b) red flag indicators associated with practices that are likely to elicit challenging behaviors, and (c) strategies for responding to challenging behaviors and developing individualized interventions (Hemmeter et al., 2014). The TPOT manual provides an extensive description of the literature from which the key practices and indicators were derived, as well as a description of each key practice area.

The TPOT manual provides an operational definition for each indicator within the 14 key practice areas. Based on these definitions, the observer rates the teacher's implementation of an indicator as a "Yes" if it is observed, or a "No" if it is not observed. To determine a score, the number of indicators rated as a "Yes" within each key practice area out of the total number of indicators within each area is used to calculate a percentage of implemented practices. For example, if an area (e.g., transitions between activities) has eight indicators and the teacher implements two of them, the percentage would be 25% for that key practice area. Successful completion of and certification through a TPOT reliability training workshop is necessary to ensure reliable scoring when using this measure. For the purpose of this study, two researchers (first and third author) successfully completed this workshop and received reliability status.

Reliability and validity of the TPOT has been described in previous research (e.g., Snyder et al., 2013). Specifically, reliability was reported as high (Phi coefficient = .89; G coefficient= .95), and convergent validity of the instrument was .70 for emotional support, .73 for classroom organization, and .76 for instructional support (Snyder et al., 2013). The validity was determined by measuring the correlations with the Classroom Assessment Scoring System (CLASS; Pianta,

LaParo, & Hamre, 2008). Thorough descriptions of the psychometric integrity of the TPOT are available in the TPOT Research Edition Manual (Hemmeter et al., 2014).

Individualized TPOT. An individualized TPOT form was used to measure each teacher's implementation of teaching practices related to specific areas across baseline and intervention phases. The researchers created the individualized forms to include only the key practice areas and corresponding indicators for the three lowest scoring areas from the initial TPOT observation for each teacher. Percentages for each of the key practices areas were calculated using the same procedure described above.

Experimental Design

An experimental single-subject multiple probe across participants design (Horner & Baer, 1978) was used to assess the effects of coaching and performance feedback on the skills of three Head Start teachers in their implementation of *Teaching Pyramid Model* practices. Like other single-subject designs, a multiple probe design allows for visual analysis of the data. Through this research design, a researcher aims to demonstrate a functional relation between the intervention and dependent variables, rather than a statistical significance.

The baseline logic in this research design consists of three factors: (a) prediction, (b) verification, and (c) replication. A prediction can be demonstrated when the data path is stable and in the opposite direction of the wanted effects in the intervention. A verification can be demonstrated when no changes are occuring with the second and third participants who are still in the baseline phase. This shows that without intervention, changes in the dependent variables are not occuring, and that changes in the dependent variables of the first participant are caused by the intervention. Finally, the replication factor can be demonstrated by changes in the dependent variables of the second and third participants after the introduction of intervention (Cooper, Heron, & Heward, 2007). Showing these three factors, a study demonstrates a functional relation.

Unlike a multiple baseline design, a multiple probe design does not require ongoing data collection in the baseline phase. Instead, probing is sufficient. In addition to time-efficiency, this design prevents the participants from unnecessary observations, which may disrupt the learning environment, or make the participants feel frustrated or uncomfortable.

In the current study, the percentage of indicators implemented by the teachers related to each of the areas on the individualized TPOT form was measured during baseline and intervention phases. All three teachers began the baseline phase at the same time. When a stable trend was observed after four data points, the first teacher entered the intervention phase. The remaining two teachers continued in baseline with intermittent probes until the first teacher demonstrated two stable intervention data points. Then, the second teacher entered the intervention phase. The same procedures were followed with the remaining teacher. Mastery criterion was defined as implementation of 80% of the indicators in the targeted area.

Dependent Variables

Primary Variable. The primary dependent variable of this study was the percentage of teachers' implemented practices related to the targeted key practice area identified during the

baseline phase for each teacher. During baseline and intervention phases, teachers were assessed using the individualized TPOT forms. Observers calculated the percentage of indicators teachers implemented for each of the areas on the individualized forms.

Secondary Variables. Two secondary variables were included to examine the social interactions within the classroom. These data were used as supplementary confirmation of data collected using the TPOT. The logic for choosing this measure was based on findings that improved social interactions and reductions in challenging behaviors were found in classrooms where teachers received coaching and classroom support to implement *Pyramid Model* practices (Hemmeter, Snyder, Fox, & Algina, 2011 as cited in Hemmeter et al., 2014).

One of these secondary variables included classroom observations on the social interactions between the teacher and children (teacher-child), using 15-second momentary time sampling. Teachers scored (+) if a positive interaction was observed (e.g., complimenting, giving praise, attentively listening to children, watching children). Teachers scored (-) if a negative interaction was observed (e.g., using verbalizations, such as "stop doing," or "don't do," or threatening negative consequences). Teachers scored (0) if no interaction was observed (e.g., cleaning up without attending to children's talk, being busy with paperwork). Data were recorded for 15 minutes during circle time and center time, and the total duration of one transition.

The other secondary measure included classroom observations on the social interactions of children (child) in the classroom, using 15-second momentary time sampling. Because this study primarily focused on measuring changes in teacher practices as opposed to changes in the behavior of specific children, the researchers chose to collect summary data that provided a broader view of the classroom social climate by using the indicator in the TPOT to score whether or not a challenging behavior occurred. To remain consistent with the indicators from the TPOT, data were recorded on the challenging behaviors (e.g., disruptive, noncompliant, or challenging behaviors as defined by Hemmeter et al., 2014, in the TPOT) exhibited by children in the classrooms during circle time, center time, and transitions. Although this measure focused on identifying undesired behaviors, the aim of the measure was to examine possible improvements in social interactions and behavior such as that noted by Hemmeter and colleagues (2011) as a result of teacher's becoming more competent in supporting appropriate social and emotional development. Summary social interaction data related to children was scored (-) if a challenging behavior was observed in any child in the classroom at the end of each interval. The observations lasted 15 minutes during circle and center times. Observations during transitions lasted for the duration of one complete transition. An observation during each activity (i.e., circle, centers, transition) per condition (i.e., baseline, intervention) per teacher was conducted once. After the completion of each observation, the number of each outcome (i.e., +, -, 0) was divided by the total number of intervals (e.g., 60), and multiplied by 100 to generate a percentage for each of the aforementioned secondary measures.

Interobserver Agreement

Interobserver agreement (IOA) was assessed on 25% of the data across baseline and intervention phases. The two researchers who had successfully completed TPOT reliability training collected data. One researcher collected data on all baseline and intervention sessions. Another researcher collected data on 25% of baseline and intervention sessions for IOA purposes. IOA was calculated indicator-by-indicator in each of the three areas for each teacher using the formula of dividing the

number of agreements by the total number of agreements and disagreements multiplied by 100 (Kazdin, 1982). An acceptable mean of interobserver agreement was 80% or above across each phase for the primary dependent variable. The mean of IOA at baseline phase was 85% (range = 80% to 90%). The mean of IOA at the intervention phase was 90% (range = 85% to 95%).

Procedures

After receiving Institutional Review Board approval and consent forms from the teachers, the study began.

Pre-Baseline. An initial TPOT observation was conducted in the pre-baseline phase with the goal of identifying the lowest scoring areas to inform the focus of intervention for each teacher. During this phase, the two trained researchers conducted an observation of each of the three teachers using the TPOT. Consistent with the guidance in the TPOT manual, each of the two-hour observations was conducted in the teacher's classroom, using and scoring the first eleven key practice areas of the TPOT measure during typical classroom activities. Immediately following each observation, the respective teacher was interviewed individually by both researchers to complete the last three areas of the measure. Researchers used the TPOT scores to identify the three lowest scoring areas and create an individualized TPOT observation form for each teacher as described previously.

Baseline. Based on the TPOT scores obtained at pre-baseline phase, the lowest three scoring areas were identified for the baseline observations. At this phase, one of the trained researchers conducted 2-hour observations using the individualized TPOT forms. The baseline observations began the day after the conclusion of pre-baseline. The baseline observations took place in each of the teachers' classrooms, during the daily activities (e.g., circle time, centers, & transitions). During the baseline phase, no coaching or performance feedback was given to the teachers. Additionally during this phase, a classroom observation of social interactions (i.e., secondary variables) was conducted in each classroom by a second researcher. Based on the baseline data, researchers identified the focus area for intervention for each teacher (i.e., low scoring and most stable area).

Intervention. The intervention phase started with the teacher, who first recieved four stable baseline data points, and was then staggered across teachers as described previously. The intervention included individual coaching and performace feedback provided by the same researchers who rated the teachers on the TPOT. Specifically, one researcher coached teachers on strategies to implement the indicators of the targeted area, and a second researcher observed the teachers and provided them with performance feedback.

The researchers followed the intervention steps suggested for coaching on the *Teaching Pyramid Model* in prior research. Individualized coaching sessions were conducted once a week by one researcher, each session lasting approximately 10 minutes. Following the example of Fox and colleagues (2011), coaching entailed goal setting with each teacher, developing an action plan, and providing suggestions and feedback related to their implementation of *Teaching Pyramid Model* practices. Coaching sessions took place in a separate room and were audiotaped.

Following each coaching session within the same week, the second researcher, who did not participate in the coaching session, observed the teacher in the classroom and collected intervention data, using the individualized TPOT form. Although the indicators related to the targeted area was the focus of the intervention, data were also collected on the other two low scoring areas assessed during baseline to explore potential effects of the intervention on non-targeted areas. Based on the observations, the second researcher provided individualized performance feedback related to the targeted area through email at the end of the week. Performance feedback included noting what the teacher had done well, and providing a suggestion for a challenge that was observed. This method (i.e., the use of email) was necessary in order to measure fidelity of implementation of performance feedback.

Coaching sessions and individualized performance feedback were provided to all three of the teachers until they met the criterion level of at least 80% on indicators in their targeted areas for improvement or the school year ended. In addition, a classroom observation on social interactions for each teacher was conducted by the researcher not providing coaching.

Intervention Fidelity

Fidelity of intervention was analyzed for 25% of the data. Based on training resources located through the Technical Assistance Center on Social Emotional Interventions (http://challengingbehavior.cbcs.usf.edu) fidelity checklists were used to assess the fidelity of intervention. One checklist consisted of 12 steps and was used to assess the fidelity of coaching sessions. The second checklist consisted of eight steps and was used to assess the fidelity of performance feedback emails. One researcher used these fidelity checklists when listening to 25% of the audiotaped coaching sessions, and when reviewing 25% of performance feedback emails. The intervention fidelity was 100% on the coaching sessions as well as performance feedback emails, provided to each of the participating teachers.

Data Analysis

A visual analysis of the data was conducted to determine if there were any changes in levels, trends, and stability of data across participants. For the primary dependent variable, a graph of the percentage of targeted TPOT items as well as those in the non-targeted areas implemented correctly by each teacher was used. For the secondary dependent variables, descriptive statistics (i.e., percentage of intervals) were used to analyze potential differences in social interactions in baseline and intervention phases.

RESULTS

Figure 1 represents the data on the primary measure of this study (percentage of TPOT indicators in three areas) that show the effects of coaching and performance feedback on teachers' implementation of *Teaching Pyramid Model* practices. Figure 2 shows the data on the secondary measures (social interactions) that show the effects of coaching and performance feedback on the social interactions within the classroom.

Primary Variable Results

Hellen. Hellen's targeted area was transitions between activities (e.g., using warnings, teaching expectations of transitions, providing positive descriptive feedback for engaging in the transitions, keeping children engaged during transitions). Her non-targeted areas were supportive conversations (e.g., acknowledging children's communication, calling children by name, joining children's play and having a conversation with children), and prompting children's engagement (e.g., providing developmentally-appropriate activities, communicating at eye level, assisting children in selecting centers).

Baseline. Figure 1 shows a decreased trend in Hellen's data in terms of the percentage of implemented indicators related to transitions between activities with a range of 13% to 38% (*M* = 22%) of the eight indicators related to transitions between activities. Baseline data related to supportive conversations with children show a range of 30% to 50% (*M* = 38%) of the 10 indicators of this area. Baseline data related to promoting children's engagement ranged from 11% to 33% (*M* = 22%) of the nine indicators of this area.

Intervention. Based on baseline data, transitions between activities was the lowest scoring area with the most stable trend, and, therefore, the targeted area of intervention. Hellen's intervention data show a substantial increase in the percentage of her implemented indicators in the targeted area (i.e., transitions) with a range of 50% to 88%. She mastered the criterion of 80% or higher on the targeted area after receiving three coaching sessions. Increases also occurred in one non-targeted area, promoting children's engagement. In this non-targeted area, Hellen scored between 33% and 67% as opposed to 11% and 33% during baseline. However, no increases were observed in Hellen's non-targeted area of supportive conversation between baseline and intervention phases (range= 30% to 50%). Statistically, Improvement Rate Difference (IRD; Parker, Vannest, & Brown, 2009, 95% of confidence interval) was used to measure the effect size. IRD values range from 1.00 (the intervention has large effects on the dependent variable) to 0 (the intervention has no effect on the dependent variable). IRD results for Hellen were 1.0 in transitions between activities, 0.33 in supportive conversations, and 0.66 in prompting children's engagement.

Joey. Joey's targeted area was teaching friendship skills (e.g., prompting children to initiate interactions and respond to their peers; praising children who are working together; using a variety of strategies to teach sharing, turn-taking and other friendship skills). Her non-targeted areas were providing directions (e.g., using simple, short, and specific directions; providing positive descriptive feedback for following directions; telling children what to do rather than what not to do; redirecting children who are withdrawn) and teaching social and emotional competencies (e.g., structuring activities for children to work together, modeling expected social skills and emotional competencies, helping children reflect on their use of social skills or emotional competencies).

Baseline. Baseline data on providing directions show a range of 29% to 57% (*M* = 43%) of the seven indicators of this area. In terms of teaching social and emotional competencies, baseline data ranged from 0% to 13% (*M* = 8%) of the eight indicators of this area. Baseline data show a stable trend on teaching friendship skills with no range (*M* = 0%) of the nine indicators of this area.

Intervention. Based on baseline data, teaching friendship skills was the lowest scoring area with the most stable trend, therefore, teaching friendship skills became the targeted area of intervention. After a stable trend at a zero level during baseline, Joey's data on the targeted area

of intervention substantially increased with a range of 67% to 100% of indicators. Joey mastered the criterion of 80% or higher on the targeted area after receiving four coaching sessions, and was able to implement 100% of indicators in the targeted area of intervention after receiving the fifth coaching session. Increases were also observed on the non-targeted areas of intervention. Providing directions increased from 57% of indicators during baseline phase to 86%, at its highest, during intervention. Teaching emotional and social competencies increased from 12.5% during baseline to 88%, at its highest, during intervention. Joey's IRD results were 1.0 in teaching friendship skills, 0.66 in providing directions, and 1.0 in teaching emotional and social competences.

Sharon. Sharon's targeted area was promoting children's engagement. Her non-targeted areas were providing directions and supportive conversations.

Baseline. Baseline data on supportive conversations with children ranged from 20% to 50% (M = 30%) of the 10 indicators of this area. Baseline data show a decreased trend on promoting children's engagement with a range of 0% to 62% (M = 21%) of the nine indicators of this area. Another decreased stable trend was also observed on providing directions with a range of 14% to 28% (M = 18%) of the seven indicators of this area.

Intervention. Based on baseline data, promoting children's engagement had the most stable trend with low scores; therefore, promoting children's engagement became the targeted area of intervention. Although Sharon did not reach the mastery criterion of 80% on the targeted area of intervention because of the short duration of study, a clinically substantial increase occurred. Sharon's implementation of the TPOT items of promoting children's engagement increased from a stable trend of 0% of indicators during baseline to 56% during intervention after receiving two coaching sessions. Other clinically substantial increases were also observed on the two non-targeted areas. Supportive conversations with children increased from a range of 20% to 50% during baseline, to a range of 60% to 70% during intervention. Providing directions increased from a range of 14% to 28.5% during baseline phase, to a range of 28.5% to 71% during intervention. Sharon's IRD results were 1.0 in supportive conversations, 0.85 in promoting children's engagement, and 1.0 in providing directions.

Secondary Variables Results

Figure 2 shows the results of the social interaction measures.

Hellen's classroom. During baseline, the percentage of positive interactions with children for Hellen was 8% of intervals during transitions, 4% during whole group time, and 49% during centers. The percentage of the teacher's negative interactions with children was 33% of intervals during transition, 30% during whole group time, and 14% during centers. The percentage of no interactions with children was 58% of intervals during transitions, 67% during whole group time, and 37% during centers. Results of summary child social interactions in Hellen's classroom during baseline show consistent results related to challenging behaviors during baseline. The percentage of intervals in which at least one child was engaging in challenging behavior was 46% of the intervals during transitions, 32% during whole group time, and 33% during centers. No social interactions data were able to be collected in Hellen's classroom during the intervention phase due to her resignation from her teaching position.

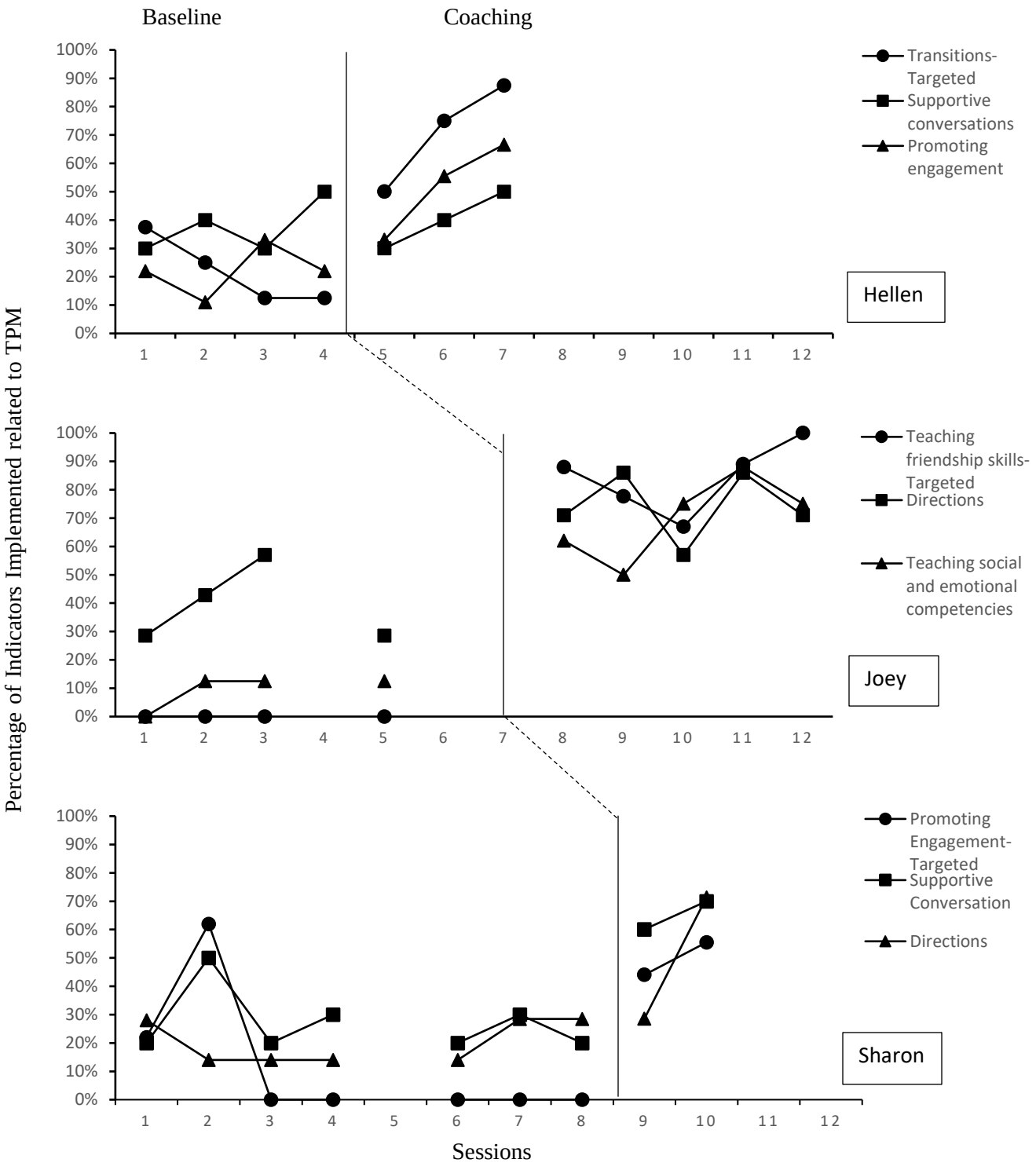

Figure 1. Teachers' implementation of pyramid model practices.

Joey's classroom. During baseline, the percentage of positive interactions with children for Joey was 67% of intervals during transitions, 95% during whole group time, and 84%

during centers. The percentage of negative interactions with children was 0% of intervals during transition, whole group time, and centers. The percentage of no interactions with children was 33% during transitions, 5% during whole group time, and 14% during centers. Results of summary child social interactions in Joey's classroom during baseline show variable percentages of intervals in which at least one child engaged in challenging behavior with 33% of intervals during transitions, 57% during whole group time, and 25% during centers.

During intervention, the percentage of positive interactions with children for Joey increased to 100% of intervals during transitions, and remained stable during both whole group time (97%) and centers (88%). The percentage of the teacher's negative interactions with children also remained stable across all three settings (range = 0% to 3%). The percentage of no interactions with children decreased to 0% during transitions, and whole group time, and 12% during centers. Intervention summary child social interaction data in Joey's classroom show a decline in challenging behaviors. The percentage of intervals in which at least one child engaged in challenging behavior was 30% during transitions, 10% during whole group time, and 5% during centers.

Sharon's classroom. During baseline, the percentage of positive interactions with children for Sharon was 31% of intervals during transitions, 92% during whole group time, and 52% during centers. The percentage of the teacher's negative interactions with children was 18% during transition, 8% during whole group time, and 7% during centers. The percentage of no interactions with children was 49% during transitions, 0% during whole group time, and 59% during centers. Results of summary child social interactions in Sharon's classroom during baseline show high numbers of intervals in which at least one child was engaged in challenging behaviors for two of the settings. The percentage of intervals in baseline was 66% during transitions, 68% during whole group time, and 11% during centers.

During intervention phase, social interaction data indicate the percentage of positive interactions with children for Sharon remained at a similar level as in the baseline phase; 59% of intervals during transitions, 79% during whole group time, and 65% during centers. The percentage of the teacher's negative interactions with children increased to 21% of intervals during transition, 41% during whole group time, and 19% during centers. The percentage of no interactions with children decreased to 0% of intervals during transitions and whole group time, and 16% during centers. Intervention summary child social interaction data in Sharon's classroom show inconsistencies in the percentage of intervals in which at least one child engaged in challenging behavior. The percentage of intervals decreased to 27% during transitions, and 21% during whole group time, but increased to 22% during centers.

DISCUSSION

The current study investigated the effects of coaching and performance feedback on the implementation of practices related to the *Teaching Pyramid Model* by three Head Start teachers. The findings of this study suggest a functional relation between individualized coaching and performance feedback and the implementation of *Teaching Pyramid Model* practices.

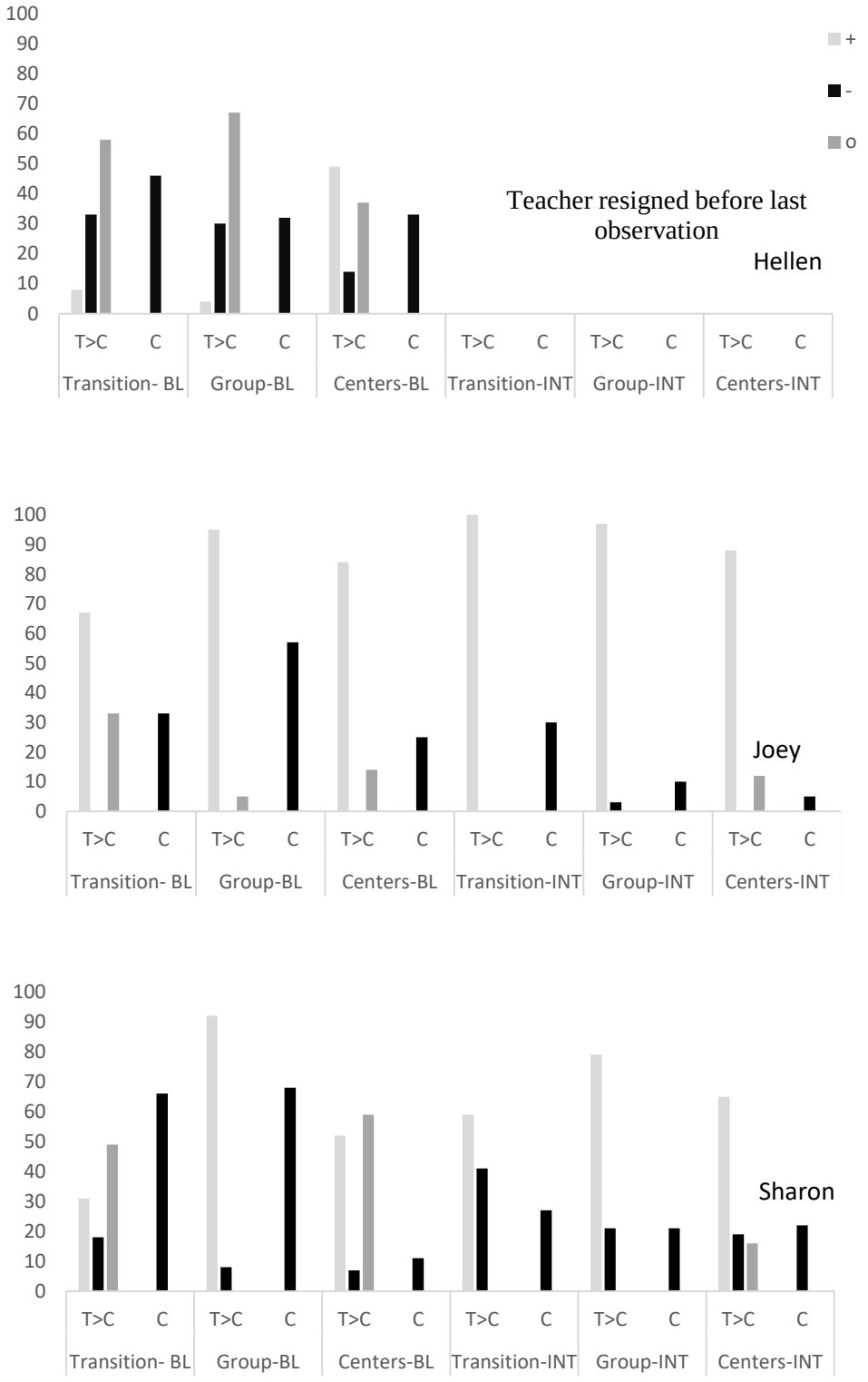

Figure 2. Percent of intervals of teachers' and children's social interactions.
Note. T > C teacher's interactions with children, C challenging behaviors of children, + positive interactions, - negative interactions, o no interactions. BL = baseline, INT = intervention.

These results extend the findings of a previous study that examined the impact of coaching and performance feedback on the implementation of *Teaching Pyramid Model* practices of three public preschool teachers (Fox et al., 2011). Although the current study explored only three areas of concern for each teacher, data indicted a functional relation between the intervention and an improved knowledge and use of practices related to this model.

As previously shown, Hellen's and Sharon's areas of concern were at the universal level of the *Teaching Pyramid Model* (i.e., nurturing and responsive relationships, and high quality supported environments). On the other hand, Joey's areas of concern were related to more explicit targeted teaching practices that could be used universally with the whole class or under the secondary tier to target social-emotional and behavioral needs of specific children who are at risk for developing challenging behaviors. Although the teachers' needs were related to practices that could fall under different tiers of the model, the findings of this study demonstrated the effects of individualized coaching and performance feedback on the implementation of *Teaching Pyramid Model* practices, regardless of under which tiers their needs fell. As the graphed results demonstrate, all three teachers showed an immediate increase in their targeted area of intervention. Although lesser and variable, improvements occurred on the non-targeted areas of intervention for each teacher. This implies that targeting one area of the *Teaching Pyramid Model* in intervention may increase implementation of practices in other areas that were not targeted in intervention. Although one teacher, Sharon, did not master the criterion of 80%, her IRD results suggested a large effect size in the targeted area, as well as the non-targeted areas. Additionally, both Hellen and Joey exceeded the mastery criterion within three to five coaching sessions. This finding addresses Fox and colleagues' (2011) recommendation in which they directed future researchers to examine the minimal amount of coaching needed to improve teacher's implementation of practices. Further, Hellen's and Joey's data manifested large effect sizes in the targeted areas and moderate to weak effect sizes in the non-targeted areas.

The results of the present study also add to the literature by providing data on social interactions within the classroom related to children. The findings showed little improvements in regards to children's challenging behavior after the teachers received individualized coaching and performance feedback; however, there are some considerations related to the interaction data that are interesting to note. For example, during Hellen's baseline transitions, she was either not engaging, or engaging in negative interactions with the children in her classroom at the end of 91% of the intervals recorded. Not surprisingly, at the end of nearly half (46%) of the intervals recorded, at least one child in her classroom was engaged in challenging behaviors. These findings are consistent with transitions being the targeted area of support identified through the TPOT. Further, when looking across all contexts at Hellen's interaction data, a pattern of substantial amounts of time either not engaged, or engaged in negative interactions with children is also consistent with her anecdotal reports of feelings of stress. It is also interesting to compare the baseline data on positive interactions for Joey, who had received prior training, to the other two teachers, who had no prior knowledge of the *Pyramid Model*. Lastly, the intervention social interactions data for Joey reveals a consistent pattern of positive interactions within the classroom across contexts, confirming that individualized supports for this teacher may have helped enhance her competencies and increase consistency related to *Teaching Pyramid Model* practices.

Limitations

A few limitations associated with the current study need to be considered. First, the time allocated for this study was short and in the spring of the school year. The short period of time and the ending of the school year prevented researchers from gathering more data on Sharon's implementation of TPOT items related to her three areas of concern. The short time also prevented researchers from collecting maintenance data on all three teachers. The end of the school year is also a time when special events occur, altering the typical school schedule, and potentially influencing both teacher and child behaviors. Second, before beginning the study, the teachers were promised a $70 gift card upon the completion of the study. This incentive might have influenced their performance during the study to meet the expectations of completing the study, rather than being fully invested in the process and potential outcomes. Third, the presence of the observer during assessment observations might have altered teachers' performance during the intervention. In other words, there was no way of ascertaining whether the teachers implemented the *Teaching Pyramid Model* practices only during the observer's presence or also beyond that time period. A fourth limitation is associated with the differences in teachers' prior experience. Joey was the only participant who had some exposure to the *Teaching Pyramid Model* before the study took place, although her previous exposure to the model did not exceed a one-day workshop. This could explain why Joey was the only teacher whose areas of concern were related to more explicit targeted teaching practices as opposed to more universal practices. Further, Joey's competence related to universal practices implemented under the first tier of the *Teaching Pyramid* Model, and her quick response to the intervention suggests her awareness may have influenced her change in performance, relative to the other two teachers who did not have prior knowledge.

Related to child social interactions data, one limitation to the data collection procedure chosen is whether it truly represented what was actually happening in the classroom. For instance, the absence of a child with challenging behaviors could have influenced the results of child social interactions measured during intervention in Joey's classroom. That is, the data collection procedure (i.e., once during baseline and once during intervention) did not control for other variables, or identify if the challenging behaviors were isolated to one particular child or demonstrated by multiple children.

The last limitation to this study is the differences in teachers' targeted-areas of intervention. Although the essence of this study was to examine individualized coaching fitted to each teacher's needs, the results might have been more powerful had the targeted areas of intervention been the same across teachers. Finally, because this study was implemented in one setting (i.e., Head Start), it remains unknown whether similar results would manifest in other settings such as private childcare centers. Therefore, results should be interpreted with caution in regards to their generalizability to other teachers in different early childhood settings.

Implications for Practice

The low implementation of practices related to the *Teaching Pyramid Model* demonstrated in baseline data is consistent with prior research that suggests many early childhood teachers do not have the level of training needed to successfully promote appropriate social-emotional development, or use preventative strategies when supporting young children with challenging

behaviors in the classroom (Branson & Demchak, 2011), nor sufficient skills to handle problem behaviors in the classroom (Domitrovich et al., 2009; Driscoll & Pianta, 2010).

To ensure that early childhood professionals are prepared to support the development of social competencies in young children, the above concerns should be addressed at two levels. First, early childhood teacher preparation programs need to provide preservice teachers with training in a comprehensive model, such as the *Teaching Pyramid Model*, to prepare them to support the development of social-emotional skills in all children based on individual children's needs.

Second, as suggested by Whittaker and Harden (2010), in-service early childhood teachers need professional development supports to acquire and enhance skills related to promoting social competencies and preventing challenging behaviors in young children. The findings of the present study revealed increases in teachers' implementation of *Teaching Pyramid Model* practices due to coaching and performance feedback, school administrators need to consider feasible approaches to provide in-service preschool teachers with training followed by individualized supports, such as ongoing coaching and performance feedback, to improve their implementation of evidence-based practices. As suggested by Joey's response to the intervention, teachers may be able to quickly and effectively increase their use of evidence-based practices when they receive initial awareness through professional development trainings followed by individualized supports that help them advance and refine their use of the strategies. It is also crucial to provide teachers with wide opportunities to practice strategies that address challenging behaviors of children with developmental disabilities. Research findings have shown a relationship between professional development and attrition of teachers (Gersten, Keating, Yovanoff, & Harniss, 2001). Anecdotally, Hellen expressed feelings of stress related to responding to a child with developmental disabilities and challenging behaviors in her classroom. Although her data indicated overall improvements, she expressed that she felt otherwise; and, although we are not aware of her reasons, it is possible that these feelings may have contributed to her decision to resign from her position during the timeframe of this study.

Suggestions for Future Research

The results of this study can be extended in several ways. First, researchers should examine the individualized coaching framework on more than one targeted TPOT area, as we chose to do, such as the study previously conducted by Fox et al. (2011) in which they included all TPOT areas. This approach can provide a bigger picture regarding the extent to which coaching and performance feedback can be effective. Second, although the social interaction data in this study presented an opportunity to consider the effects of the intervention on the social climate of the classrooms, future research could examine the relation between individualized teacher coaching and performance feedback on child outcome data specific to children who need targeted supports to develop social-emotional skills such as sharing, turn taking, and expressing emotions, as well as children who engage in challenging behaviors. This can be done by defining each child's desired targeted skill/behavior, collecting data on each child during each phase, and presenting the data on a graph. In addition, future research should include collecting maintenance data to examine whether individualized coaching and performance feedback has lasting effects on teachers' implementation of *Teaching Pyramid Model* practices. Finally, to strengthen understanding of the effects of coaching and performance feedback, researchers should investigate the effects of

coaching and performance feedback across teachers whose needs fall under the same key practice area of the *Teaching Pyramid Model*.

CONCLUSION

The purpose of this study was to examine the effects of individualized coaching and performance feedback on the implementation of *Teaching Pyramid Model* practices by three Head Start teachers. The findings of this study demonstrated increased implementation of *Teaching Pyramid Model* practices after introducing individualized coaching and performance feedback. The intervention resulted in a more immediate increase of implemented practices in the targeted area of each teacher compared to their non-targeted areas. IRD results suggested a large effect size on the targeted area for each teacher. The summary results on the social interactions of children were inconclusive. The variability may be attributed to the missing data from one of the classrooms as well as the summary approach in the data collection procedures. In other words, this study did not provide data on specific target children. Nevertheless, the current study contributes to the literature by adding evidence of the benefits of individualized coaching and performance feedback on Head Start teachers' implementation of evidence-based practices, thus, potentially positively impacting the social-emotional development of young children in Head Start programs.

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