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USING FIDELITY MEASURES TO SUPPORT COLLABORATION
IN INCLUSIVE PRESCHOOL SETTINGS

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Structured Abstract

Clinical Question: In addition to measuring the accuracy of the delivery of intervention, can fidelity measures provide insight on the effectiveness of the SLP–teacher collaborative consultation and increase embedded language intervention opportunities in the classroom?

Method: Systematic review of literature

Study Sources: Electronic databases: American Speech-Language Hearing Association Journal Archives, Educational Resources Information Center (ERIC), PsychINFO, and Web of Science

Search Terms: preschool + language, preschool + literacy, preschool + coach, preschool + consultant, preschool + collaboration

Number of Included Studies: 3

Primary Results:

Studies reported on two types of fidelity measurement: treatment delivery fidelity and training fidelity. Fidelity measures were used to support ongoing, collaborative relationships between teachers and consultants by providing a framework for feedback and discussion.

Conclusions:

In addition to measuring fidelity of implementation, SLPs can use fidelity measures to guide the implementation of evidence-based practice in collaborative relationships with teachers in inclusive classroom settings. Tools to measure fidelity can be developed collaboratively by SLPs and teachers to support evidence-based practice in meaningful contexts.

Using Fidelity Measures to Support Collaboration in Inclusive Preschool Settings

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Clinical Scenario

Jana, a speech-language pathologist (SLP), visits the Learning Express preschool classroom each week for 60 minutes. She collaborates with the lead teacher Pam to support Maya, a new 3-year-old student with Down Syndrome, to communicate and participate in daily classroom activities. During Jana's weekly visits to the classroom, she is confident that she and Pam facilitate and encourage Maya's participation in meaningful communicative exchanges in functional classroom activities. However, she is unsure if they use the intervention strategies with sufficient frequency and consistency to support Maya's communication development. Jana also wonders if their collaborative consultation provides sufficient support for Pam to implement the interventions between her visits. Pam reports that she uses the language intervention strategies, but when Jana asks about Maya's progress, Pam only offers general comments (e.g., "she's doing great" or "pretty quiet today"), which leaves Jana wondering about the effectiveness of her consultation efforts. Jana specifically wants to know:

- (a) During their collaboration sessions, is she engaging Pam enough in the intervention process by problem solving, demonstrating treatments, and offering Pam sufficient opportunities to practice and receive feedback?
- (b) Are they embedding sufficient opportunities for Maya to practice her communication in classroom routines throughout the day to ensure her progress?
- (c) How can she keep track of how she is using coaching and collaboration strategies with Pam in the classroom to determine if the strategies are effective and a good investment of her time?

This article focuses on fidelity—tracking interventions to determine if they are delivered as planned, in collaborative consultation between SLPs and preschool teachers—and the research literature that supports SLPs measuring fidelity relative to delivering communication

interventions, collaborative consultation, and coaching practices with teachers. To identify and implement meaningful fidelity measures, Jana asked: In addition to measuring the accuracy of the delivery of intervention, can the results of fidelity measures provide insight on the SLP–teacher collaborative consultation and increase embedded language intervention in the classroom for Maya?

Background

Collaborative consultation in an inclusive classroom typically is described as a supportive relationship in which teachers and SLPs work together to enhance the teachers' ability to use intervention strategies (Dinnebeil, Pretti-Frontczak, & McNerney, 2009). This collaboration can provide opportunities for consistent, targeted sharing of ideas and information that leverage areas of expertise to improve outcomes for young children with communication delays or disabilities. Classroom teachers and SLPs work together to plan, implement, and evaluate naturalistic intervention approaches embedded in classroom activities. Teachers and SLPs each bring unique strengths to the collaborative relationship. Their effective collaboration can greatly improve the program quality and daily experience for a child with a communication delay or disorder (Wilcox, Gray, Guimond, & Lafferty, 2011). For collaborative consultation to be efficient and effective, both partners need a shared knowledge base relevant to students' communication and learning needs (Roth & Troia, 2006). Regular education classroom teachers provide multiple language-learning opportunities and SLPs provide knowledge and experience with implementing evidence-based, naturalistic language intervention strategies. Effective collaborative consultation between SLPs and teachers can increase the teacher's confidence and competence in using naturalistic intervention techniques and facilitate generalization to a variety of functional contexts to achieve the best possible outcomes for children with communication disabilities (Kaderavek & Justice, 2010).

One way to ensure that teachers and SLPs share knowledge and apply the collaborative plans that include how and when to implement intervention strategies is with *fidelity* measurement. Fidelity, or the degree to which intended procedures are adhered to (Pence, Justice, & Wiggins, 2008), helps both collaborators to be “on the same page” by measuring what was planned and comparing it to what was done. Fidelity is measured to monitor the accuracy and consistency of intervention (Dollaghan, 2004).

SLPs and teachers are held to increasingly higher standards of accountability of evidence-based practice. How evidence-based interventions are implemented can result in great variability in outcomes achieved (Kaderavek & Justice, 2010). Measuring fidelity enables SLPs, educators, and researchers to determine whether or not interventions are carried out as planned, providing valuable information for program planning and response to intervention. Fidelity measures also make it easier to replicate intervention studies or practices, because they include the most critical components of the intervention.

Types of Fidelity

To measure fidelity in the context of language intervention in an inclusive preschool classroom, SLPs and teachers must understand the different types of fidelity that can be measured (Smith, Daunic, & Taylor, 2007). Table 1 presents descriptions and examples of the different types of fidelity that researchers, teachers, and clinicians may consider measuring in the process of making decisions about evidence-based practice.

Fidelity of *study design* refers to the process of developing and structuring fidelity measures in a manner consistent with evidence-based practice. Jana is in the beginning stages of thinking about fidelity of design as she considers how to monitor language intervention being provided for Maya, and how she is using evidence-based strategies for coaching and collaborating with Pam.

Fidelity of *training* ensures that intervention is taught the same way to each of Maya’s communication partners. Training fidelity measures could help Jana ensure that Pam, the classroom assistant, and Maya’s parents are trained to provide Maya with consistent communication intervention the same way.

It also is important for Jana to think about fidelity of *treatment delivery*, or how intervention strategies are implemented or carried out. Jana can measure treatment delivery fidelity to record if interventions are implemented

as designed, the amount of intervention received (“dosage”), and quality of implementation (Carroll et al., 2007). For instance, during classroom visits, Jana demonstrates how to respond to Maya’s words by adding more contingent language. When Maya says “read book,” Jana responds with “read puppy book” (Maya’s 3-word target level) and says to Pam, “Expanding Maya’s phrase ‘read book’ by repeating and adding the word ‘puppy’ to describe the book gives Maya a model of a 3-word phrase.” A measure to record fidelity of treatment delivery could then indicate whether Pam used expansions at Maya’s target level a minimum number of times as Maya took her turn watering the classroom plant and participating in other classroom activities. Tools such as checklists can support fidelity of treatment delivery, ensuring that the “active ingredients” of an intervention are present (Pence, Justice, & Wiggins, 2008). Treatment delivery can be measured by self-report, reviewing video, or by having one collaborator observe the other. Additional considerations for treatment delivery are the methods of coaching and consultation Jana uses in her interactions with Pam. For example, because Jana is concerned that she may not facilitate enough opportunities for Pam to practice intervention strategies and receive feedback, or engage in problem solving, these would be items to address with measurement of treatment delivery fidelity. Similarly, Jana and Pam could use self-report, video review, or observation to assess each component of the collaborative consultation process.

The next step for Jana to think about is how she will know if the intervention is effective. *Treatment receipt* ensures that recipients of an intervention or treatment (in this case both Maya and Pam) have gained skills. Fidelity of treatment receipt for Maya would address gains in communication and classroom participation; for Pam, gains in embedded intervention skills; and for Jana, increased time actively problem solving, demonstrating, and providing practice and feedback opportunities during her classroom consultations.

A final consideration relating to fidelity is *treatment enactment*, or the transfer of knowledge and skills to a variety of meaningful contexts. Professionals working with young children may not use language facilitation strategies across a variety of activity contexts (e.g., Girolametto, Weitzman, & Greenberg, 2003). Thus, treatment enactment is an important consideration to ensure that Maya’s communicative competence is supported throughout the day in classroom activities, and that Jana supports Pam’s use of embedded intervention in a variety of contexts.

Search for Evidence

To determine how fidelity measures are implemented in the research literature relating to collaborative consultation in inclusive preschool settings, a set of inclusionary/exclusionary criteria were developed for a literature search. Studies were included if they were (a) set in preschool classrooms; (b) included ongoing teacher collaboration with “coaches,” “mentors,” or “consultants”; (c) targeted a communication or literacy-related intervention; and (d) reported results of measures of fidelity. The search process included the American Speech-Language Hearing Association Journal Archives, Educational Resources Information Center (ERIC), PsycINFO, and Web of Science with the keywords preschool + language, preschool + literacy, preschool + coach, preschool + consultant, or preschool + collaboration. Studies that described teachers’ implementation fidelity following an initial training but did not include ongoing support from a coach or consultant were excluded. The purpose for excluding these studies was to specifically target coaching/consultation support and focus on the types of ongoing relationships SLPs have with preschool teachers in “real world” inclusive classroom settings. A total of 245 articles were considered for inclusion, and of these only six met the full inclusionary criteria and were included in the review. Table 2 presents a summary of these six studies.

Evaluating the Evidence

Summary of Included Studies

Participants in the six reviewed studies included 233 preschool teachers and over 11,000 preschool students (the number of students in participating classrooms was not reported for one study, Domitrovich et al., 2009). All preschool classrooms included students identified as having, or being at risk for developing, a speech and/or language delay or impairment. Teachers participated in varying levels of consultation support in the six studies, including group trainings, classroom-based support, and individualized coaching/mentoring. In the reviewed studies, collaborative consultation support was referred to as coaching (Hemmeter, Snyder, Kinder, & Artman, 2011; Hsieh, Hemmeter, McCollum, & Ostrosky, 2009; Justice, Kaderavek, Fan, Sofka, & Hunt, 2009; Powell, Diamond, Burchinal, & Koehler, 2010) or mentoring (Domitrovich et al., 2009; Wilcox et al., 2011). Individuals providing mentoring or coaching were described as early

childhood specialists (Powell, Diamond, Burchinal, & Koehler, 2010), master teachers (Domitrovich et al., 2009), teachers and SLPs (Wilcox et al., 2011), doctoral students (Hemmeter et al., 2011) and researchers/research staff (Hsieh et al., 2009; Justice et al., 2009). Four studies utilized randomized control trial methodology (Domitrovich et al., 2009; Justice et al., 2009; Powell et al., 2010; Wilcox et al., 2011); two used a single-subject design (Hemmeter et al., 2011; Hsieh et al., 2009).

Fidelity Measurement in Included Studies

All studies reviewed measured treatment delivery fidelity (also referred to as implementation fidelity), or the degree to which an intervention was implemented as intended: (a) between the consultant and classroom teacher in the context of an ongoing relationship using specific strategies for coaching/consultation; and/or (b) between the classroom teacher and children to determine teachers’ use of specific strategies to support children’s language and literacy skills. Following a training, or initial information sharing between the consultant and teacher, studies included either in-classroom observation by the consultant, video-recorded classroom activities of teachers using targeted strategies, or self-reported fidelity of treatment delivery by teachers.

In one study, coaches used an observation checklist that included strategies and multiple examples of how each strategy could be used. Coaches scored each observation item “yes” or “no” and used the checklist to provide feedback to the teacher following the observation (Hsieh et al., 2009). Other studies used multiple methods to record treatment delivery fidelity. For example, Domitrovich et al. (2009) included two treatment delivery measures that were also used to structure weekly coaching sessions. With one measure, teachers rated their own teaching practices on an implementation checklist; with the other, observers rated the implementation as observed.

In another study, researchers provided preschool teachers with feedback related to their use of descriptive praise during circle time. Supportive and corrective feedback was provided via email, and fidelity of *treatment delivery* was reported on this feedback process (Hemmeter et al., 2011). Justice et al. (2009) provided feedback to teachers on their use of print-referencing, but the fidelity of this feedback was not reported.

Among the six studies reviewed, two measured *training* fidelity to ensure that coaches provided information and training supports to all participating teachers in the same manner (Hemmeter et al., 2011;

Hsieh et al., 2009). Coaches also used these checklists to plan and structure coaching sessions (Hsieh et al., 2009). Fidelity of study design, treatment receipt, and treatment enactment were not reported in the reviewed studies.

All studies included in the review measured fidelity of treatment delivery in the form of class-wide implementation of a procedure, rather than individualized support for a targeted child. Teachers participated in coaching/consultation on an individual basis in all studies.

Factors That Affect Fidelity

The implementation of evidence-based practice is impacted by both the intervention itself and the support system in place to help teachers use a particular practice with fidelity (Domitrovich et al., 2009). The coaching relationship between a preschool SLP and classroom teacher can be an essential component of teachers' fidelity of treatment delivery for a given intervention with a student who needs communication supports in the classroom. This may be achieved through fidelity measures in various models of collaboration (see Roth & Troia, 2006). It is essential for SLPs and teachers to work together and combine their professional skills and knowledge to develop measures of fidelity that are meaningful and relevant to their relationship and to the success of each individual child. These tools offer direct benefits to children in the form of increased consistency and quality of exposure to evidence-based intervention and also support effective communication between SLPs and classroom teachers by providing another layer of communication in working together toward common goals.

Making the Evidence-Based Decision

Systematic measurement of different types of fidelity can greatly affect the embedded intervention process through consultative SLP–teacher collaboration in preschool settings (Kaderavek & Justice, 2010). In reviewing the research literature, Jana identifies five key considerations for fidelity measurement to help guide her collaborative relationship with Pam in the Learning Express classroom: (a) clinical responsibility and accountability, (b) individualization for maximum utility, (c) learning through self-reflection, (d) tools for collaborative consultation, and (e) tools for teaching. Jana and Pam consider these aspects of fidelity measurement to develop two treatment delivery fidelity checklists (see Appendices A and B). Pam uses a checklist (“Supporting Maya’s Communication,” Appendix A) to record how and

when she uses embedded intervention strategies to support Maya’s communication each day throughout the week when Jana is not there.

To develop this fidelity checklist, Pam and Jana worked together to identify intervention strategies that Pam could use during classroom activities to address Maya’s IEP goal of using 3- to 5-word phrases and sentences to communicate wants/needs, comments, and responses in participating class routines and activities. Pam agreed to fill out the checklist each day during the children’s naptime to record her use of intervention strategies that day, and comment on Maya’s responses. Jana emails Pam once a week to check-in and see if the checklist is helpful and if the strategies are successful in supporting Maya’s communication in the classroom.

The second checklist addresses Jana’s and Pam’s joint priorities for collaborative consultation to help ensure they are using evidence-based practices to support their relationship. In this example the “treatment” delivered is use of evidence-based strategies for collaborative consultation using coaching strategies to support learning. To develop this checklist (“Keys for Collaboration,” Appendix B), Jana and Pam brainstorm the most important parts of their relationship and look to the literature for measureable components of classroom-based coaching and collaboration. For example, Pam mentions that it would be helpful to get feedback from Jana on how she is using strategies to support Maya’s language, and Jana adds that she wants to make sure to “set the stage” or work with Pam during each classroom visit to ensure that intervention targets are meaningful, relevant, and feasible in the context of classroom activities. They also include items from the treatment delivery checklist for language intervention to support Maya in the classroom (Appendix B, Checklist Item 2), to ensure coaching practices are linked to the specific intervention strategies that they agreed on to support Maya’s communication in the classroom.

Interpreting the Evidence for Fidelity Measurement

Clinical responsibility and accountability. Fidelity measurement is part of Jana’s clinical role in using evidence-based practice as an SLP (Kaderavek & Justice, 2010). Just as she has the responsibility to identify appropriate intervention strategies to support the children on her caseload, Jana must also ensure that she and the teachers with whom she works implement interventions accurately and with enough frequency to facilitate growth

in students' communication skills during classroom routines and activities. In addition, it is critical for Jana to ensure that her interactions with Pam follow principles of adult learning and best practice for collaboration in the classroom context.

Individualization for maximum utility. Jana's search through the literature revealed that fidelity measures can be flexible and individualized, and that there are multiple ways to measure fidelity in various contexts. While initially apprehensive about the idea of adding more paperwork and more to do in her busy day, Jana is confident that with careful planning and good organization she can utilize fidelity measures in multiple dimensions to support her relationship with Pam as they work together to support Maya. The example checklists that Jana found in her literature search offered ideas about how to measure fidelity, whether by observing teachers, asking teachers to self-report their own use of strategies, or by self-reporting her own use of coaching strategies. To develop "Supporting Maya's Communication" and "Keys for Collaboration" checklists, Jana and Pam modified Jana's required contact note to include items related to collaborative consultation and the use of intervention strategies throughout the week, as reported by Pam.

Learning through self-reflection. Fidelity measurement can help SLPs learn about themselves as clinicians in self-evaluation and reflection (Woods, Coston, Lawrence, & Richmond, 2005). As she learned more about the process of fidelity measurement, Jana gained insights about her own strengths and areas for improvement as a consultant. She recognized that she shares information with Pam about intervention strategies and collaboratively brainstorms how the strategies could be implemented in classroom activities. Jana noted, however, that she rarely uses other coaching strategies, such as guided practice with feedback, to support Pam's learning through active practice with feedback on her performance and Maya's responses. By reflecting upon her own coaching practices, Jana can make a more concerted effort to use a balance of coaching strategies to support Pam in increasing her use of communication strategies with Maya in the classroom.

Tools for collaborative consultation. Fidelity measures are useful in collaborative relationships with teachers (e.g., Hsieh et al., 2009) and caregivers. Through her research, Jana identified different options to monitor how she uses coaching strategies to support Pam, as well as strategies that could be adapted for tracking her interactions with Maya's parents as they support her

communication at home and in the community. By creating and using fidelity tools together, SLPs and teachers can enhance the quality and consistency of their collaboration. Periodically revisiting fidelity measures can help both the teacher and the SLP determine whether or not the intervention is delivered as intended, and if the collaborative relationship fits the needs and preferences of both professionals.

Fidelity measures as tools for teaching. Fidelity can be used as a teaching tool to share information and feedback with teachers, caregivers, and other professionals in a concise manner to emphasize the critical components of an intervention (e.g., Hemmeter et al., 2011). In reviewing the research literature on how fidelity measures are used between teachers and consultants, Jana realized that she could increase her effectiveness and efficiency of information sharing by using a fidelity measure to structure information sharing and feedback. This could also help to address fidelity of treatment enactment to ensure intervention strategies are used in multiple routines across the day for generalization. As Jana uses fidelity measures to ensure that she is consistently using evidence-based strategies to consult with Pam, she is supporting Maya's inclusion and meaningful participation in classroom activities to the fullest extent possible.

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Table 1. Types of Fidelity

| Type of Fidelity | Description | Example |
|----------------------------------|--|---|
| Study design | Ensuring research methodology is based on theory in terms of processes and content | Intervention based on evidence- based practice such as dosage/duration |
| Training | Teaching precise implementation and ensuring that training is consistent across all individuals who will use an intervention | Use of a training manual or training checklist |
| Treatment delivery/ intervention | Use of comparable protocols in intervention | Use of a checklist of essential components |
| Treatment receipt | Ensuring recipients' acquisition of knowledge and skills | Ongoing assessment of knowledge and skills via observation or discussion |
| Treatment enactment | Transfer of knowledge and skills to contextual settings | Assessment of treatment delivery in a variety of meaningful contexts and activities |

Table 2. Studies Reporting Fidelity Measurement

| Reference | Type(s) of Fidelity Reported | Fidelity Results |
|--------------------------|--|---|
| Domitrovich et al., 2009 | Treatment delivery fidelity | Coach ratings of teachers' treatment delivery fidelity increased from an average of 3.01 to 3.69 over 8 months. |
| Hemmeter et al., 2011 | Training fidelity Treatment delivery fidelity | Training checklist items implemented with 100% fidelity; Components of email feedback checklist delivered with 100% fidelity according to researcher observation. |
| Hsieh et al., 2009 | Training fidelity Treatment delivery fidelity | Coach training fidelity and treatment delivery fidelity of a coaching intervention was 100% across all observed sessions using fidelity checklists. |
| Justice et al., 2009 | Treatment delivery fidelity | Teachers' treatment delivery fidelity was 85% for treatment group, 17% for comparison group as measured by a fidelity coding protocol using video of classroom activities. |
| Powell et al., 2010 | Treatment delivery fidelity | Coach recommendations were directly related to the professional development program content in 98% of occurrences of coach feedback. A form to document coaching sessions and feedback was discussed, but not included as a fidelity measure. |
| Wilcox et al., 2011 | Treatment delivery fidelity | Treatment delivery fidelity (procedural) increased from 71% to 87% of teachers using all components. Average fidelity of quality components of treatment delivery fidelity increased from 1.7 to 2.5 (on a 3-point scale). |

Appendix A

| Supporting Maya's Communication | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|---|--|---|--|--|--|---------------------------|--|---|--|---|--|--|--|---|---------------------------|--|---|--|---|--|--|--|---------------------------|--|---|--|---|--|--|--|
| <p>- Use this checklist to document use of strategies to help Maya use longer phrases. - Check "yes" or "no" to record use of these strategies in classroom activities like circle time, classroom chores, snack/lunch, dramatic play, reading books, outside play, art activities, etc.</p> <p>Today's Date: _____</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>Comments/observations about Maya's communication today:</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix B

| | |
|---|------------------|
| Collaboration Note | Date/Time: _____ |
| Teacher: _____ | Child: _____ |
| SLP: _____ | |
| Classroom Routines: _____ | |
| Targeted Objectives: _____ | |
| Intervention Strategies/Techniques: _____ | |
| _____ | |

| Keys for Collaboration | Never or rarely | 1–2 times in an activity | 1–2 times in more than one activity | Frequently across all activities |
|--|-----------------|--------------------------|-------------------------------------|----------------------------------|
| 1. Set the stage together to identify priorities | | | | |
| 2. Observe teacher-student interaction: turn taking, responsiveness, expansions | | | | |
| 3. Build on Pam’s specific strategies and supports that are working well (e.g., comment on 3 things that are going well) | | | | |
| 4. Share information about Maya’s current communication status while focusing attention on target behavior(s) and next steps | | | | |
| 5. Provide opportunities for Pam to practice using specific intervention strategies with Maya | | | | |
| 6. Provide performance-based feedback related to Pam’s use of intervention strategies | | | | |
| 7. Connect skills being learning in current routines and settings to other activities to encourage generalization | | | | |
| 8. Summarize and problem solve action plans for “between visit” routines and activities | | | | |