



Effects of an early childhood educator coaching intervention on preschoolers: The role of classroom age composition[☆]

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ABSTRACT

Heterogeneity in treatment effects of MyTeachingPartner (MTP), a professional development coaching intervention focused on improving teacher–student interactions, was examined for 1407 4-year-old preschoolers who were enrolled in classrooms that served children between the ages of 3 and 5. On average, there were no consistent impacts of MTP coaching on children's school performance, but there was evidence of moderation in treatment effects as a function of classroom age diversity, defined as the proportion of children who were *not* 4 years of age. MTP coaching improved children's expressive vocabulary, literacy skills, and inhibitory control in classrooms that served primarily 4-year-olds and were less age diverse. These effects were in large part due to MTP causing improvements in teachers' instructional support that in turn was more predictive of children's skills in less age-diverse classrooms. Results also indicated that the nature of age diversity did not matter; a greater number of 3- or 5-year-old classmates equally reduced the benefits of the MTP intervention for 4-year-olds. The sole exception occurred for receptive vocabulary, in which case, MTP was most effective in classrooms with a larger number of older (but not younger) children. Taken together, these results suggest that under the right circumstances, the benefits of professional development that improve early childhood educators' teaching practices can also translate into benefits for students.

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1. Introduction

Although preschool programs hold promise in preparing children for kindergarten, there is increased interest in understanding how to strengthen program benefits (Duncan & Magnuson, 2013; Phillips et al., 2017; Yoshikawa et al., 2013). Investment in professional development (PD) for early childhood educators has been part of this effort, including opportunities provided through the Race to the Top Early Learning Challenge program. Even with the frequent argument for additional investment in providing teachers with ongoing PD, and the considerable outlay of funds for this purpose, prior evaluations of such services indicate mixed benefits for children (for a meta-analysis see: Markussen-Brown et al., 2017).

The scientific community has been urged to now examine more nuanced questions about improving preschool impacts through PD for teachers, notably the range of conditions that potentially moderate PD program impacts (Sheridan, Edwards, Marvin, & Knoche, 2009).

MyTeachingPartner (MTP; Pianta, Mashburn, Downer, Hamre, & Justice, 2008) is a PD intervention that has been found to improve teachers' classroom practices (Downer et al., 2014; Pianta, Masburn et al., 2008), and in prior studies, these benefits have translated into improvements in children's success both in preschool (Mashburn, Downer, Hamre, Justice & Pianta, 2010) and in the secondary grades (Allen, Pianta, Gregory, Mikami, & Lun, 2011). Newer evidence from larger-scale multi-site evaluations of MTP in pre-K classrooms, however, suggests a lack of impact on child outcomes despite improvements in teachers' classroom behaviors (Pianta et al., 2017). A potential focus for an explanation for these equivocal findings, both in the general PD literature and for MTP specifically, is the nature of the classroom setting, particularly conditions that can elevate demands on the teacher and possibly undermine the benefits derived from PD. That is, although PD may actually improve teachers' knowledge or skills, these impacts may not translate into benefits for children unless certain classroom conditions

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are present, one of which, age diversity, we consider in this investigation.

1.1. Coaching interventions and the effectiveness of MyTeachingPartner

PD coaching interventions provide on-going direct support to teachers to improve their knowledge, skills, or teaching strategies that are then applied in their classroom interactions with students (Sheridan et al., 2009). Unlike coursework or workshop trainings, coaching programs offer individualized inputs to teachers based on cycles of observation, implementation, self-reflection and evaluation, and feedback (Sheridan et al., 2009). The MTP coaching program is a PD coaching intervention that focuses on teachers' interactions with students in their classroom, particularly features of instructional support. Teachers receive individualized and ongoing feedback from a coach about specific interaction behaviors with students, as defined and measured by the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008). The goal of MTP coaching is to improve teachers': (a) skills to observe specific features and elements of their interactions with children and their consequences for children's responses; (b) awareness and knowledge of how these interactions contribute to students' early learning; and (c) reflection on their own motivations and tendencies in these interactions.

The theory of change underlying MTP is that by observing effective teacher–child interactions and receiving individualized feedback related to their own interactions with students, teachers' instructional support skills will improve to provide cognitively challenging, yet appropriate, learning opportunities for children through presentation of higher order concepts, opportunities for extended conversations, and consistent, timely, process-oriented feedback (i.e., path a of Fig. 1). These shifts in interaction in turn, will result in improvements in children's early learning (i.e., path b of Fig. 1). This theory of change underlying the MTP coaching model is based on an extensive body of literature that has demonstrated that teachers' day-to-day interactions with students, especially those geared toward stimulating children's thinking and reasoning, shape children's academic learning and executive functioning (Burchinal, Vandergrift, Pianta & Mashburn, 2010; Hamre & Pianta, 2005; Mashburn et al., 2008). Indeed, developmental theory suggests that children's academic development in particular is conditional on the opportunities adults provide them to express existing skills and scaffold more complex ones (Davis & Miyake, 2004; Skibbe, Behnke, & Justice, 2004; Vygotsky, 1978). Classroom interactions with children that are cognitively stimulating, direct, and intentional lay the groundwork for facilitating children's academic and behavioral development, including their language and literacy skills and executive functioning (Johnson et al., 2016; Mashburn et al., 2008; Weiland, Ulvestad, Sachs, & Yoshikawa, 2013).

Even with these potential benefits of high-quality teacher–child interactions, we know that teachers' stimulation and support of children's early learning (i.e., instructional support) is limited in many preschool classrooms across the country (Burchinal, Zaslow, & Tarullo, 2016; LoCasale-Crouch et al., 2007), which means, at present, that children are less likely to reap the maximum benefit from these early learning environments. Given the general pattern of results illustrating the importance of teacher–child interactions (Burchinal et al., 2010, 2016; Hamre & Pianta, 2005; Johnson et al., 2016; Mashburn et al., 2008), the MTP intervention, which was designed to improve teachers' interactions with children, suggests that these impacts—under the right circumstances—can translate into improvements in student's school success. That is, improvements in teacher–child interactions that result from the MTP coaching intervention can facilitate children's early learning outcomes (i.e., path a × path b of Fig. 1).

Prior evaluations of the MTP coaching intervention (with these same data) document significant improvements in teachers' instructional support interactions, which include supporting children's higher order thinking skills (effect size = 0.59), providing intensive feedback (effect size = 0.51), and using language facilitation strategies (effect size = 0.68; Downer et al., 2014). Despite these documented benefits, the quality of teachers' instructional support, on average, is still relatively low even *after* the MTP intervention (CLASS score of 2.76), and these improvements in instructional support have translated only inconsistently into improvements in children's school performance (Mashburn et al., 2010; Pianta et al., 2017). In fact, an intent to treat analysis with the National Center for Research on Early Childhood Education (NCRECE) Professional Development Study (the same data used as this study) documented small impacts, on average, for children's self-regulation (during the year after treatment only) and children's classroom-level language behaviors, but not for academic skills (Pianta et al., 2017). These authors also found no evidence of heterogeneity of effects when looking at a selected group of program- (auspice and dosage), teacher/classroom- (teacher education and curriculum), and child-level factors (home language and pre-test scores) as moderators (Pianta et al., 2017). These authors, however, did not consider the demands that may stem from the diversity in children's needs at the classroom-level, such as the ages of children or the percentage of minority children in a classroom.

Although the MTP coaching intervention has yielded mixed benefits for preschool-aged children in various evaluations (Mashburn et al., 2010; Pianta et al., 2017), there is no question that the classrooms within which these interventions take place are heterogeneous in nature. This is an important point of consideration given that the evaluations of MTP showing few impacts on children were conducted in nine highly diverse locations in eight states (Pianta et al., 2017), when studies detecting impacts on students were done in state-funded pre-K programs in a single state (Mashburn et al., 2010). Characteristics of the work setting (e.g., school-based pre-K or federally funded programs), age of children served (infants, toddlers, and preschool age), and teacher–child ratios have been repeatedly noted as shaping the experiences of children and their teachers (Clarke-Stewart & Allhusen, 2005) in ways that may influence the need for and impact of PD, especially when taken to scale (Sheridan et al., 2009). The PD literature has often focused on the possible moderating impacts of individual children's attributes (e.g., whether a child is an English language learner) and broader classroom/program characteristics (e.g., auspice and curriculum); however, less attention has been devoted to composition and demands of the classroom (e.g., the proportion of English language learners in a classroom). Diversity in classroom-level demands could prove to be a more powerful moderator of treatment impacts than the characteristics of any one individual child, a possibility confirmed in the first evaluation of MTP showing larger benefits for teachers in classrooms in which all children were below the poverty line (Pianta, Mashburn et al., 2008).

1.2. Implications of classroom age diversity for professional development

The current study focuses on classroom age diversity as a potential moderator of MTP coaching effects on children. We focus on this aspect of classroom context for a number of reasons. Primarily, the age composition of classrooms is of research and policy interest given that the mixing of ages provides one avenue for increasing 3-year-olds' access to preschool (Phillips et al., 2017). For example, recent national estimates reveal that roughly 75% of Head Start classrooms across the country serve children of different ages (Ansari, Purtell, & Gershoff, 2016), and older estimates from National Center for Early Development and Learning Multi-State

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