| An Integrated Early Literacy and Motor Skill Intervention to Improve Letter Knowledge, Phonological Awareness and Fundamental Motor Skills |
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## Project Description

The prevalence and effects of delayed early literacy and motor skill development in children of low-SES backgrounds is a significant issue that can have adverse developmental consequences and affect children's ability to succeed in school. Head Start programs serve nearly one million preschool children at risk for delays in the development of multiple school readiness skills due to low-socioeconomic status underscoring the need for evidence-based integrated curricula. Integrated curricula include interdisciplinary and cross-curricular activities and assessments that can positively impact the development of more than on skill. This project will specifically address delays in early literacy and fundamental motor skill development as being two important factors that impact school readiness. This study will examine the effectiveness of the Reading and Motor Program for Preschoolers (RaMPP), an integrated curricula model designed to improve child outcomes in early literacy and fundamental motor skill development.

### Research Questions

1. To what extent does the RaMPP intervention impact letter knowledge, phonological awareness, and fundamental motor skill development of Head Start preschool children relative to Head Start business-as-usual instruction?
2. To what extent are the intervention effects on children's literacy and motor outcomes impacted by child-level characteristics (age, race, gender, attendance, and minority language status)?

## Sample

The study will be conducted in Franklin County Ohio and will include 5 Head Start preschool centers and a total of 12 classrooms. A total of 180 students will be participate in the project. Children must be between the ages of 3-6 years and of typical cognitive development. Children with significant cognitive or physical delays or disabilities that limit their physical functioning or mobility necessary to perform the physical activities or with limited ability to use language or produce sounds (e.g., cognitive impairment, hearing loss, autism, cerebral palsy) will be excluded from the study, but will participate in the activities with their class with modifications and assistance as needed. Children who are English language learners or from households where the primary language spoken in the home is a language other than English will be included. These language factors will be addressed in the data analysis plan.

## Methods

The study will use a two-group, quasi-experimental, pre-posttest design with 5 Head Start preschool centers and a total of 12 classrooms. Two preschool centers will be randomly assigned to the RaMPP intervention condition (6 classrooms) and three centers participating as the control site (6 classrooms). A total of 180 students will be participate in the intervention ($n = 90$) or business-as-usual control condition ($n = 90$) based on the center they attended. The data analysis using Hierarchical Linear Modeling (HLM) will account for nesting of the data in center and classroom to examine intervention effects on child literacy and motor outcomes. Additionally HLM will enable estimation of the separate effects of child age, gender, race, attendance, minority language status, classroom, and the treatment condition on outcomes at posttest. Descriptive and correlational statistics will also be included.

*Data collection measures and procedures*
Data collection for this study involves three main categories of measurement:
(1) Child early literacy and fundamental motor outcomes (pre-and posttest): Literacy - two tasks from the *Phonological Awareness Literacy Screening* (PALS; Invernizzi, Meier & Sullivan, 2004) Alphabet Knowledge and The Beginning Sound Awareness Task; Fundamental Motor Skills - *The Test of Gross Motor Development-2* (TGMD2; Ulrich, 2000).
(2) Child- and teacher/classroom-level factors: *School and Classroom Profile Survey* - information on the

characteristics of the individual children in the classroom including age, gender, race, and if they are identified as an ELL student; *Daily Attendance Logs*; *Body Mass Index* (BMI)- at pretest and posttest, researchers will measure and record each child's height and weight and calculate BMI = Ratio of height/weight2 in order to provide descriptive data on participants; *Caregiver Questionnaire* - The primary caregiver of each participating child will provide basic background and demographic information including race and primary language spoken in the home as potential sources of variation in child outcomes. In addition, primary caregiver's past and present type and level of participation in physical activity/sports, primary caregiver's past and present reading difficulties, time spent reading for enjoyment, and attitudes toward reading will provide descriptive and correlational data; *Teacher Background & Beliefs Survey* - teachers will provide demographic information including age, race, level of education, years of experience, and amount and type of recent professional development. In addition, teachers will provide background information about their participation in physical activities and/or sports. The second section of the survey will provide information about teachers' personal beliefs about early childhood programs and practices.

(3) Implementation fidelity and program evaluation: fidelity of implementation will be assessed in two ways. First, *Intervention Logs* will be used for researchers to report the time spent on the lesson, group size, session location, and completion of activities and progressions for the skills targeted during each intervention lesson. Second, fidelity will be coded using the *RaMPP Fidelity of Implementation Tool (FIT)*. The RaMPP intervention will be implemented in a group setting two days a week, over an 8-week period, for 30-35 minutes per day (16 lessons total) during the regularly scheduled physical activity time during the school day. Lessons will be administers by the researcher as the primary instructor. Lead Head Start teachers will assist and play an active instructional role in practice stations within each of the lessons. Assistant Head Start teachers will play a supportive role and help monitor practice stations and manage the group and individuals. Each lesson will be video recorded. Lead teachers will receive specialized training on the RaMPP curriculum in order to provide instructional support on targeted motor and literacy skills and address the specific objectives and formats for each lesson procedures include (1) a 1-day training workshop (approximately 5 hours during a scheduled planning day).

## Progress Update
Recruitment of participants will begin December 1, 2015 in collaboration with leadership at the Child Development Council of Franklin County, Inc., Head Start.

## Implications for policy/practice
With nearly one million preschoolers enrolled in Head Start nationwide, this project has the potential to have long-term positive impacts on the ability to meet national and Head Start early literacy and physical development/health program objectives addressing school readiness goals relevant to this study including domains of literacy development, physical well-being and motor development, and approaches to learning. This study will provide evidence to inform curricula, assessment, and instructional strategies teachers can use to effectively support development in key school readiness skills (i.e., phonological awareness, letter knowledge, fundamental motor skills) to meet Head Start program objectives.

## Implications for research
This study will provide data on the impact of practices using an integrated intervention delivery model on letter knowledge, phonological awareness, and fundamental motor skill competence outcomes. It will provide aggregate child-level assessment on the effects of child-level factors (e.g., age, gender, race, attendance, and minority language status) on child outcomes. In addition, this study will provide descriptive and correlational teacher-level data on background and beliefs about literacy and motor skill practices and their perceptions and evaluation of the RaMPP program, and how teachers respond to training.

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