

Abstract Title Page

Title:

Comparing Skills-Focused and Self-Regulation Focused Preschool Curricula: Impacts on Academic and Self-Regulatory Skills

Authors and Affiliations:

Christopher J. Lonigan, Ph.D. (Presenter)
Department of Psychology & Florida Center for Reading Research
Florida State University
1107 W. Call Street
Tallahassee FL 32306-4301

Beth M. Phillips, Ph.D.
Department of Educational Psychology and Learning Systems &
Florida Center for Reading Research
Florida State University
2010 Levy Ave., Suite 100
Tallahassee FL 32310

Abstract Body

Background:

Accumulating research evidence has highlighted that the developmental sequence of skills important for educational success originates before children begin formal schooling (e.g., Lonigan, Schatschneider, & Westberg, 2008a; Whitehurst & Lonigan, 1998), and an increasing amount of research evidence indicates that significant gaps exist in the development of early language and literacy skills and subsequent educational achievement between children from different socio-economic backgrounds (e.g., Hart & Risley, 1995; Lonigan, Burgess, Anthony, & Barker, 1998). The body of research evidence also has demonstrated the value of early intervention for promoting development of these skills (e.g., Lonigan, Schatschneider, & Westberg, 2008b). Despite evidence that teacher-directed instruction can have significant and meaningful impacts on young children's early literacy and reading skills, it is not uncommon to encounter a philosophy of early childhood education fixed in a vague constructivist, child-directed notion of learning that eschews a focus on specific skill outcomes and teacher-directed learning opportunities (as opposed to teacher-created environments in which a child selects the learning to be done). Teacher-directed instruction and a focus on specific skills quickly earn the pejorative label "developmentally inappropriate" and are deemed harmful to children's development. Objections to providing young children more or more directed early educational experiences are often rooted in concerns that early instruction in academic skills will result in negative consequences, particularly in the domains of children's socio-emotional development and motivation (e.g., Stipek et al., 1998; Stipek, Feiler, Daniels, & Milburn, 1995).

Along these lines, hypotheses concerning why some children fail to develop the skills requisite for taking advantage of regular instruction concern the role of self-regulation or executive functions in learning (e.g., Diamond, 2010; Diamond, Barnett, Thomas, & Munro, 2007). That is, to be effective learners, children are assumed to need to be able to bring their attention to bear on the learning task, to evaluate their own efforts and self-correct. These skills are assumed to play a role both in children's ability to take advantage of instruction and also in their ability to control their behavior in the classroom in adaptive and productive ways. Research has shown that children's self-regulation is related to their academic achievement--both in preschool and early elementary school grades (e.g., Blair & Razza, 2007; Duncan et al., 2007; McClelland et al., 2006; Monette, Bigras, & Guay, 2011). Such associations between children's self-regulation and academic outcomes have resulted in calls for early instruction to focus on promoting children's self-regulation skills instead of (or in addition to) promoting early academic skills (e.g., Diamond, 2010). To date, however, there have been few studies that have directed examined the relative benefits of skills- versus self-regulation-focused preschool curricula.

Purpose & Research Question:

The primary goal of this study was to evaluate the relative effectiveness of a skills-focused preschool curriculum versus a curriculum designed to foster children's self-regulation skills. Additionally, the study was designed to evaluate if adding a self-regulation component to a skills-based curriculum would enhance children's outcomes in academic skills, self-regulation skills, or both. Through manipulation of curricula used by classrooms, the study tested the value of providing preschool children at risk of academic difficulties with explicit practice in self-regulation skills over and above the impacts of language and literacy interventions on their own.

Setting:

This study was conducted in public preschool programs--school district pre-k and Head Start programs--in New Mexico and Massachusetts.

Population / Participants / Subjects:

The complete sample (i.e., children assessed at both fall testing and posttesting) included 2,564 children who ranged in age from 28 to 73 months of age (mean age = 52.7 months; SD = 6.37) at the time of fall testing. There were slightly more boys (55%) than girls in the sample. On children for whom ethnicity data were available (75% of sample), the majority was Latino (52%) and 38% were white non-Latino. Approximately 25% of the sample were receiving some type of special education services and had an Individualized Education Plan. At the time of fall testing, children scored in the low-average range (i.e., standard scores of 87 - 93) on standardized tests of oral language and reading-related skills (i.e., phonological awareness, print knowledge).

Intervention / Program / Practice:

The instructional activities of classrooms/centers in the study were governed by one of four curriculum conditions:

- *Literacy Express Comprehensive Preschool Curriculum* (LECPC; Lonigan, Clancy-Menchetti, Phillips, McDowell, & Farver, 2005). LECPC is a comprehensive curriculum that is structured around 10 thematic units lasting from 3- to 5-weeks each. The core of the curriculum involves three types of small-group activities that were developed, tested, and shown to produce significant gains in preschool children's emergent literacy skills (Lonigan, 2004), including oral language, phonological awareness, and print knowledge. Children are to be exposed to each of these small-group activities nearly every day throughout the school year. Each small-group activity is designed to last about 10- to 15-minutes. The rest of the day is structured by the teacher who selects from multiple examples of large-group activities.
- *Tools of the Mind* (TOM; Leong & Hensen, 2005). The TOM curriculum was developed so that practices designed to help children develop cognitive, behavioral, and emotional self-regulation skills were explicitly embedded within instructional activities. Two activities, play plans and support for play, are the central self-regulation activities in TOM. In the "Free Play/Learning Center Play Plans," children make a written plan that describes which center they are going to play in and what they are doing to do there, the role, and the actions. This activity is intended to promote meta-play (the ability to think about play actions) and the ability to create pretend scenarios using language. At the beginning of the year, the play plans usually consist of a scribble; teachers help children make their drawing of the play a more and more detailed representation of their plan and begin to use "scaffolded writing" to write the plan. During "Center Play Interactions," teachers help children learn to *enact their written play plan*, which serves as a blueprint to get the play in the centers started. Self-regulation is promoted during play itself, and teachers intervene to make sure that children can invent multiple themes, roles, and pretend scenarios that will enable them to stay involved and active in the same center for 40 to 60 minutes at a time.
- *Combined Curriculum* (Combination). A combined curriculum condition included the core LECPC themes, small-group activities, and extension activities as well as the play-planning component of the TOM curriculum. This core curriculum element involved children spending time in supporting writing of a play plan before each day's play at center time and then engaging in role-based imaginative play. Theme-related centers were created in classrooms to support

sustained make-believe play and the associated language and social-emotional aspects of mutually developing play activities with peers. Teachers received professional development regarding to how support the development of more sophisticated and self-regulated play by the children.

- *Business as Usual* (BAU). BAU curricula represented whatever curriculum was in use by a center/classroom prior to the study. BAU curricula typically included some variation of High Scope or Creative Curriculum.

Research Design:

This study used a cluster-randomized design in which 117 preschool centers (or classrooms in large multi-classroom centers) were randomly assigned to study condition. Preschool classrooms and centers were recruited for the project in New Mexico and Massachusetts in two cohorts. There were 42 centers/classrooms in Massachusetts (12 in Cohort 1) and 75 centers/classrooms in New Mexico (39 in Cohort 1). Prior to assignment to condition, centers/classrooms were matched into groups of four on site characteristics (i.e., district preschool, Head Start center) and results of the prior year's state-wide assessment of reading for the school that children in the pre-k center/classroom would attend the following year. Within each matched group, centers/classrooms were randomized to one of the four curriculum conditions (i.e., LECPC, TOM, Combination, or BAU). To allow investigation of the effects of familiarity with curriculum, each classroom participated in two years of the project, holding the same curriculum group assignment across both years (i.e., two cohorts of children were assessed for each classroom in consecutive years).

Data Collection and Analysis:

Measures. Within each participating classroom, a random sample of children for whom consent was obtained--the majority of children in each classroom--were selected to completed fall assessments and end-of-preschool-year posttests. These children completed the Bracken Basic Concept Scales-Revised (BBCS-R), which measures children's knowledge of in six domains (i.e., colors, letters, counting, size, comparisons, shapes), and the Test of Preschool Early Literacy (Lonigan, Wagner, Torgesen, & Rashotte, 2007), which includes a Definitional Vocabulary subtest, two phonological awareness subtests (Blending, Elision), and a Print Knowledge subtest. In addition to measures of academic outcomes, children's classroom teachers completed the Behavior Rating Inventory of Executive Function-Preschool Version (BRIEF-P; Gioia, Espy, & Isquith, 2003), and children were administered the Head-Toes-Knees-Shoulders Task (HTKS; Ponitz, McClelland, Matthews, & Morrison, 2009).

Analyses. These preliminary analyses used multi-level models with preschool center/classroom as a random factor and restricted maximum likelihood estimation to determine the impacts of the different curriculum conditions. In addition to the fixed effects of curriculum condition, state (i.e., Massachusetts, New Mexico) and classroom year of implementation (i.e., first versus second year of curriculum implementation) were included in the models. All models included children's ages, sex, and fall scores on the outcome measure as covariates. The questions of primary interest for these analyses were the impacts of the three experimental curriculum conditions relative to the control condition--as well as the impact of the TOM curriculum relative to LECPC--on both academic and socio-emotional outcomes. Consequently, these four two-group contrasts within models were examined (i.e., LECPC vs BAU, TOM vs BAU,

Combination vs BAU, LECPC vs TOM). In addition, the interactions between these two-group contrasts within state and classroom year of implementation were examined for each outcome.

Findings / Results:

Academic outcomes. Results for the two-group curriculum contrasts for a selected group of academic outcome measures, in terms of student-level effect sizes, are shown in Table B1. These results reveal a clear advantage of the LECPC and Combination curricula for outcomes measuring code-related aspects of reading-related skills (i.e., print knowledge, phonological awareness). Children in classrooms assigned to the LECPC or Combination conditions outscored children in BAU classrooms on these measures, and the effect was consistent across states and across year of classroom implementation (i.e., the contrast by state and contrast by implementation-year interaction terms were not significant for any comparison). Across outcome measures, children in TOM classrooms did not score higher than children in BAU classrooms; however, there was a trend for children in TOM classrooms to score lower than children in BAU classrooms on measures of phonological awareness, and this negative effect was significant for schools in Massachusetts but not for schools in New Mexico. Similarly, children in TOM classrooms scored below children in BAU classrooms on the TOPEL Print Knowledge subscale in Massachusetts but not in New Mexico. Children in LECPC classrooms also outscored children in TOM classrooms on measures of print knowledge and phonological awareness, and they also scored higher than children in TOM classrooms on the single-word vocabulary measure.

Socio-emotional outcomes. Results for the two-group curriculum contrasts for a selected group of socio-emotional outcome measures, in terms of student-level effect sizes, are shown in Table B2. None of the two-group contrasts were significant for any of the socio-emotional outcomes, indicating that there was no general advantage of any curriculum on children's self-regulation. The TOM versus BAU contrast, however, was modified by a contrast-by-year-of-implementation interaction. Follow-up analyses revealed that although the contrast between TOM and BAU conditions was not statistically significant in either year of implementation, it changed direction from one year to the next, and for some outcome measures, it was marginally significant in one year (although the year and direction for these marginally significant effects were not consistent).

Conclusions:

The results of this study fail to support the effectiveness of the TOM curriculum for either children's self-regulation skills or their academic skills. In contrast, both variations of the skills-based LECPC curriculum produced positive outcomes on children's academic skills with no concomitant negative impact on children's self-regulation. The addition of a core self-regulatory aspect of the TOM curriculum (i.e., play planning) to LECPC appeared to have little impact. Overall, these results suggest that greater caution is warranted in statements of the promise of self-regulation as a primary mechanism for improving children's academic outcomes. This study provides no support for concerns that skills-focused curricula will have a negative impact on children's socio-emotional skills. Of course, implementation of all curricula was variable across teachers. It may be that full-dosage levels of TOM would produce different results; however, the results of this study likely approximate the upper-end of the level of support for implementation in typical educational settings and therefore represent the likely effects of these curriculum variations.

Appendices

Appendix A. References

- Blair, C., & Razza, R. P. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development*, 78, 647-663.
- Diamond, A. (2010). The evidence base for improving school outcomes by addressing the whole children and address skills and attitudes, not just content. *Early Education and Development*, 21, 780-793.
- Diamond, A., Barnett, W. S., Thomas, J., & Munro, S. (2007). Preschool program improves cognitive control. *Science*, 318, 1387-1388.
- Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., Pagani, L. S., et al. (2007). School readiness and later achievement. *Developmental Psychology*, 43, 1428-1446.
- Gioia, G. A., Espy, K. A., & Isquith, P. K. (2003). *Behavior Rating Inventory of Executive Function - Preschool Version*. Odessa, FL: Psychological Assessment Resources.
- Leong, D. J., & Hensen, R. (2005). *Tools of the mind preschool curriculum research project manual* (2nd ed.). Denver, CO: Center for Improving Early Learning, Metropolitan State College of Denver.
- Lonigan, C. J. (2004, August). *Evaluation of Components of a Pre-Literacy Intervention with Children At-Risk*. Paper presented at the Annual Convention of the American Psychological Association. Honolulu HI.
- Lonigan, C. J., Clancy-Menchetti, J., Phillips, B. M., McDowell, K., & Farver, J. M. (2005). *Literacy Express: A Preschool Curriculum*. Tallahassee, FL: Literacy Express.
- Lonigan, C. J., Schatschneider, C., & Westberg, L. (2008a). Identification of children's skills and abilities linked to later outcomes in reading, writing, and spelling. In *Developing Early Literacy: Report of the National Early Literacy Panel* (pp. 55-106). Washington, DC: National Institute for Literacy.
- Lonigan, C. J., Schatschnieder, C., & Westberg, L. (2008b). Impact of code-focused interventions on young children's early literacy skills. In *Developing Early Literacy:*

- Report of the National Early Literacy Panel* (pp. 107-151). Washington, DC: National Institute for Literacy.
- Lonigan, C. J., Wagner, R. K., Torgesen, J. K., & Rashotte, C. (2007). *Test of Preschool Early Literacy*. Austin, TX: ProEd.
- McClelland, M. M., Cameron, C. E., Connor, C. M., Farris, C. L., Jewkes, A. M., & Morrison, F. J. (2007). Links between behavioral regulation and preschoolers' literacy, vocabulary, and math skills. *Developmental Psychology, 43*, 947-59.
- Monette, S., Bigras, M., & Guay, M. (2011). The role of the executive functions in school achievement at the end of Grade 1. *Journal of Experimental Child Psychology, 109*, 158-173.
- Ponitz, C. C., McClelland, M. M., Matthews, J.S., & Morrison, F. J. (2009). A structured observation of behavioral self-regulation and its contribution to kindergarten outcomes. *Developmental Psychology, 45*, 605-619.
- Stipek, D. J., Feiler, R., Byler, P., Ryan, R., Milbuiw, S., & Salmon, J. M. (1998). Good beginnings: What difference does the program make in preparing young children for school? *Journal of Applied Developmental Psychology, 19*, 41-66.
- Stipek, D., Feiler, R., Daniels, D., & Milburn, S. (1995). Effects of different instructional approaches on young children's achievement and motivation. *Child Development, 66*, 209-223.
- Whitehurst, G. J. & Lonigan, C. J. (1998). Child development and emergent literacy. *Child Development, 69*, 848-872.

Appendix B. Tables and Figures

Table B1

Student-Level Effect Sizes (adjusted for covariates) for Two-Group Curriculum Contrasts on Academic Outcome Measures at End of Preschool

Outcome Measures	Two-Group Contrasts			
	LECPC vs BAU	TOM vs BAU	Combination vs BAU	LECPC vs TOM
TOPEL Definitional Vocabulary				
Single-Word Vocabulary	.09	-.04	.07	.13
Definitions	.01	-.03	.08	.05
TOPEL Print Knowledge	.17	-.07	.11	.24
TOPEL Phonological Awareness				
Elision scale	-.02	-.10	.13	.08
Blending scale	.16	-.14	.25	.30
Bracken Basic Concepts Scales				
School Readiness Total	.06	-.05	.08	.11
Letters Subscale	.17	-.06	.17	.23

Note. Effect sizes shown in bold significant or marginally significant at $p < .10$.

Table B2

Student-Level Effect Sizes (adjusted for covariates) for Two-Group Curriculum Contrasts on Socio-Emotional Outcome Measures at End of Preschool

Outcome Measures	Two-Group Contrasts			
	LECPC vs BAU	TOM vs BAU	Combination vs BAU	LECPC vs TOM
BRIEF-P				
Global Executive Composite	-.02	.00	-.02	-.01
Inhibitory Self Control Scale	.00	-.02	-.01	.02
Flexibility Scale	.01	.03	-.03	-.02
Emergent Metacognition Scale	-.04	.00	-.03	-.04
Head-Toes-Knees Shoulders	-.12	-.03	-.02	-.09

Note. No effect was significant or marginally significant at $p < .10$.