BOKS Natick Multiyear Research Study
Highlights of Study Findings
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National Institute on Out-of-School Time
Wellesley College

Evaluation and research for the study were conducted from September 2011 through June 2013. Data were collected through (a) child-level school assessment data, (b) teacher and parent surveys, and (c) program data. BOKS students were compared to a nonparticipating group of peers in similar grades in the Natick school district.

There were 570 total child participants in the study, with 136 enrolled in the BOKS program in the fall of 2011. Most of the children participating in BOKS were enrolled for both fall and spring sessions. After graduation attrition and a small number of families leaving the study, there were 104 returning BOKS students and 254 returning comparison students for the second school year. New kindergarteners (n = 141) were added to the sample for the fall of 2012.

Nutrition Surveys. 124 BOKS youth completed both a pre- and post-test assessment. Significant differences in youth pre- and post-test responses were found for more than 35 percent (n = 13; 37.1%) of the thirty-five survey items. Children particularly showed more knowledgeable at post-test about various nutrition concepts including: the classification of specific foods by type; awareness of appropriate serving sized; examples of nutritionally-dense carbohydrates; and the importance of eating "real" foods.

4**00-Meter Run**. Children who had participated in a full year of BOKS programming during 2011–2012 showed a significant decrease in time completing the 400-meter run. Mean run time at the beginning of the fall session 2011 was 2.25 minutes compared to the spring 2012 mean running time of 2.15 minutes, $t(83) = 2.73$, $p < .01$. Boys also showed a significant decrease in time between fall 2011 and spring 2012 from 2.25 to 2.08 minutes, $t(45) = 3.198$, $p < .01$. Girls' mean running time improved from 2.25 minutes to 2.22 minutes, but the difference was not significant. A similar pattern was evident during Year 2. In both the 2012 fall and 2013 spring sessions, BOKS children showed a significant decrease in their 400-meter runs during each session, decreasing running time in the fall by 3 seconds and in the spring by 4 seconds. Over the course of the two sessions, boys and girls both decreased their time by 3 seconds. Kindergarteners in the Year 2 sample showed the most improvement, decreasing running time by 5 seconds.

Physical Activity Logs. Analysis of data from children who completed both the November and May logs, and who had participated in BOKS for either session, showed that BOKS children's mean number of minutes in physical activity increased more than comparison group children. This was true in Year 1 and Year 2 for all subcategories of BOKS children examined—overall BOKS group, BOKS girls, BOKS boys, and BOKS kindergarteners. BOKS 2012 kindergarteners who participated in one or two sessions of BOKS showed the highest mean change in physical activity minutes from fall to spring (41 minutes) as compared to non-BOKS kindergarteners (28 minutes).

BRIEF Scales. Analysis of working memory skills in Year 1 showed that BOKS kindergartners (full-year participants) were significantly improved ($p \leq .05$) on working-memory skills, as rated by teachers, compared to their non-BOKS peers. BOKS parents rated these same children significantly more improved on working

memory than parents of non-BOKS children ($p \leq .05$) during Year 2. New kindergarteners in Year 2 did not show significant differences in teacher or parent ratings on working memory. In Year 2, BOKS second graders were rated significantly ($p \leq .05$) more improved in shift skills by teachers as compared to their non-BOKS peers. Mean change for BOKS second graders is also greater than their non-BOKS peers for parent ratings of shift and working memory and teacher rating of working memory, although these differences are not significant. Mean change in working memory and shift over the two-year period for youth participating in BOKS for all four sessions was not significantly different from children never participating in BOKS.

AIMSweb. Year 1 analysis of ELA AIMSweb raw score change from November to May showed BOKS kindergarteners improved significantly more than comparison kindergarteners ($p \leq .05$). This pattern continued in Year 2 with BOKS youth showing more improvement on ELA ($p \leq .07$) than their peers. Findings for math for all grades were insignificant.

MCAS. Results on the Massachusetts Comprehensive Assessment System (MCAS) for ELA and math were collected on a small group ($n = 44$) of fourth-grade (2012–2013) BOKS participants. MCAS is a growth measure and provides achievement level comparison of a student against like cohorts of children. Tests change in complexity each year and become more rigorous, so yearly comparison is not necessarily linear. Generally, when compared with their cohort, BOKS children show stronger growth towards advanced/proficient status in ELA but less growth compared to their cohort in math.

Parent Perception. Researchers surveyed parents on their perceptions of their child's health during the school year. Specifically, parents were asked how they compared their child's health from one year earlier. BOKS parents with children attending one or more sessions were significantly more likely than comparison group parents to rate their child's health as better than the year before in both Year 1 and Year 2.