

EXECUTIVE SUMMARY

# Evaluation of the North Carolina More at Four Pre-kindergarten Program

## Children's Longitudinal Outcomes and Classroom Quality in Kindergarten



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### **Overview of the More at Four Program**

The North Carolina More at Four Pre-kindergarten Program is a state-funded initiative for at-risk 4-year-olds, designed to help them be more successful when they enter elementary school. More at Four is based on the premise that all children can learn if given the opportunity, but at-risk children have not been given the same level of opportunity. The More at Four Program provides funding for classroom-based educational programs at a variety of sites, including public schools, Head Start, and community child care centers (both for-profit and nonprofit). Local sites must meet a variety of program guidelines and standards around curriculum, training and education levels for teachers and administrators, class size and student-teacher ratios, North Carolina child care licensing levels, and provision of other program services. The programs operate on a school calendar basis, and children may be enrolled in classrooms serving More at Four children exclusively or in blended classrooms serving children funded through other sources such as Head Start or parent fees. Eligibility for More at Four is based on income (up to 300% of Federal poverty status) and other risk factors (limited English proficiency, identified disability, chronic health condition, and developmental/educational need). Priority for service is given first to children who are unserved in a preschool program at the time of enrollment, and second, to children who are underserved at enrollment (e.g., in a program but not receiving child care subsidy and/or in lower quality care). The More at Four Program began operations in the spring of 2002, and served almost 32,000 children during the first four program years (2002-2005).

### **Results of the Statewide Evaluation**

The current report describes the findings from a longitudinal follow-up of children from the beginning of their pre-k year in More at Four (2003-2004) through the end of kindergarten (2004-2005). The goal of this study was to provide information regarding the longer-term effectiveness of More at Four on children's readiness for and success in school.

The primary research questions addressed by this evaluation included:

- What were the longitudinal outcomes from pre-k through kindergarten for children who attended the More at Four Program?
- What factors were associated with better outcomes for children?
- What was the quality of the kindergarten programs attended by children in comparison to their pre-k experiences in More at Four?

We gathered information from a sample of 514 children in 58 randomly selected More at Four classrooms, and followed 348 of these children into kindergarten. Individual assessments of children's language and literacy skills, math skills, general knowledge, and social skills were conducted near the beginning and end of pre-k and kindergarten; observations of the quality of classroom practices were conducted in random samples of More at Four classrooms (n=99) and kindergarten classrooms (n=97) attended by these children; and demographic information about classroom and child characteristics was gathered from the programs.

## **How Much Growth in Developmental Skills Occurred for More at Four Children in Pre-k and Kindergarten?**

Children who participated in More at Four made substantial developmental progress from the beginning of pre-k to the end of kindergarten in all skill areas: language/literacy (receptive language, rhyming, literacy concepts, and naming letters); math (applied problems and counting); behavioral skills (social skills), and general knowledge (social awareness and color naming). These gains are especially notable on two standardized measures, receptive language and applied math skills, where children gained one-half to nearly one standard deviation from entry into pre-k to the end of kindergarten. For nearly all these measures, children exhibited significant growth each year, indicating that the gains children made in pre-k were sustained with continued growth through kindergarten. For one measure, receptive language skills, children made significantly greater progress during the pre-k than the kindergarten year. For a few measures, most children reached the ceiling (maximum score) either at entry into kindergarten (color knowledge and social awareness) or by the end of kindergarten (letter naming), indicating that children who attended More at Four had mastered these basic skills. These abilities, such as knowing the alphabet, knowing colors, and knowing one's name and birth date, are important foundations for children's academic success in school. The one area that showed no changes over time was problem behaviors, which remained just below the population average (lower scores represent fewer problem behaviors), indicating that children's behavior was typical for their age.

## **What Factors Are Associated with Better Outcomes for Children?**

We examined whether children's risk status at entry into pre-k was related to their rate of developmental progress over pre-k and kindergarten. Children at greater risk showed greater gains in some language/literacy skills and math skills, suggesting that the primary target groups for the More at Four Program benefited even more from participation in this early education program. The standardized effect sizes for these differences were in the moderate to large range, indicating that these were meaningful differences on these outcome measures. Substantial differences were found for children with lower levels of English proficiency, with greater gains in receptive language, applied math skills, and literacy concepts compared to children with higher English proficiency levels. Even though their scores were slightly to somewhat lower than their peers, children with lower English proficiency were progressing at a slightly faster rate during the pre-k and kindergarten program years. In contrast, children with lower levels of English proficiency made fewer gains in rhyming ability through the end of kindergarten, a more advanced phonological awareness skill which is related to early reading skills.

There were no differences in children's growth in social skills from pre-k through kindergarten on the basis of risk levels. However, children with higher total risk factor scores showed slightly greater increases in problem behaviors (higher scores), especially after they entered kindergarten, perhaps suggesting that children at higher risk were having greater difficulty adapting to the behavioral demands of kindergarten classrooms. Similarly, children at lower levels of service priority status showed somewhat greater increases in problem behaviors in kindergarten. Children at lower levels of service priority would be likely to have had previous and potentially lower quality child care experiences, consistent with other research suggesting that children with

more child care experience exhibit slightly higher levels of problem behaviors in early elementary school. However, the effect sizes for problem behaviors were fairly modest, suggesting that the changes over time, as well as the differences between groups, were much weaker than those found for other outcome measures.

To further examine the differences related to cumulative risk, we compared the performance of children at four risk levels. While children in all risk groups progressed over time, most scores remained substantially lower for children with scores in the highest risk group. However, the highest risk group also made greater progress over time on several measures of language and cognitive skills. The highest risk children scored significantly lower on most of the language and literacy measures (receptive language, rhyming, literacy concepts), math skills (applied problems), and general knowledge (social awareness) from pre-k through kindergarten. For some measures, these children caught up to the other groups by the beginning (color knowledge) or the end of kindergarten (letter knowledge, counting). These findings suggest that while children in all groups made advances during the pre-k and kindergarten years, many of the deficits in academic skills faced by children at the very greatest risk were not fully eradicated even by the end of kindergarten.

In contrast to the effects of child characteristics, we found no differences in children's developmental progress over the two years on the basis of the quality of practices in their pre-k classrooms (as measured by the ECERS-R). These results suggest that children benefited similarly from participation in the More at Four Program through the end of kindergarten, regardless of the particular pre-k classroom they attended. This finding is not surprising, given the overall high quality of practices in the pre-k classes, most of which had average scores in the highest quality range. In contrast, the quality of the kindergarten classrooms was lower than in pre-k, although higher quality kindergarten practices were associated with greater growth in children's receptive language skills.

We looked at the possible associations of other factors with children's growth to examine the extent to which children's outcomes were related to participation in More at Four, including program dosage (measured as days of attendance) and summer growth. Children who received a greater dosage of the More at Four Program had more advanced language/literacy skills (rhyming and literacy concepts) and social skills throughout pre-k and kindergarten, but did not differ in the amount of gain over time. However, none of these effects of program dosage remained after adjusting for other child characteristics. This lack of effect is not surprising, given that most children received a fairly high dosage of the program, with average attendance of 156 days, or 87% of the typical 180 day school year.

The amount of gains children made during the pre-k program year, the kindergarten program year, and the summer period between pre-k and kindergarten were compared, extrapolating individual growth curves to the beginning and end of pre-k and kindergarten to more fully capture changes during the program year. Children gained significantly more during pre-k, and kindergarten in most cases, compared to summer, on most measures of language and literacy skills, math skills, social skills, and general knowledge. Contrary to some beliefs, however, we did not find evidence of a summer loss of skills. Rather, for most areas, the growth trajectory children established in the pre-k year continued over the summer period, albeit to a lesser extent, and was re-established in kindergarten.

## **What Was the Quality of the Pre-k and Kindergarten Programs Attended by More at Four Children?**

The quality of classroom practices tended to be substantially higher in pre-k than in kindergarten, as measured by the ECERS-R. In pre-k, the average total score was in the highest quality range (mean=5.3, SD=0.7), above the medium range scores that are often found in samples of preschool programs. In kindergarten, the average total score was substantially lower (mean=3.2, SD=0.8), at the lower end of the medium level. Scores were in the highest quality range for 76% (75) of the More at Four classrooms, and in the medium quality range for the remaining 24% (24), with none in the poor quality range. In contrast, none of the kindergarten classrooms had average scores in the high quality range, with 65% (63) scoring in the medium quality range and the remaining 35% (34) scoring in the poor quality range.

The pattern of scores was similar in pre-k and kindergarten, with higher scores on the Space and furnishings, Language and reasoning, Interaction, and Program structure subscales, and lower scores on Personal care routines and Activities. Comparisons of areas of strength and weakness across the two settings provide some evidence of the continuity or discontinuity of experiences as children make the transition from preschool to school. There are a few areas of strength common to both settings, including basic furniture for routine care, play and learning; general supervision of children; interactions, both staff-child and among peers; and provisions for children with disabilities. There were also some areas of weakness common to both settings, particularly space and equipment for gross motor activities and safety practices (as well as gross motor supervision in kindergarten), both of which are important areas to consider in terms of injury prevention. A number of other areas in kindergarten classrooms scored low, reflecting differences in the focus compared to pre-k, including less attention on individual routine care needs, limited opportunities for children to make choices, and less individualization of activities. Areas that scored relatively higher within kindergartens reflected a greater emphasis on academic activities as well as a broader emphasis on diversity in public school settings. In terms of potential factors for quality improvement, lower class size was associated with better quality in kindergarten, but not pre-k.

One other key difference from pre-k classrooms is the use of specials in kindergarten, where children receive instruction by specialists in particular areas, such as PE or art. While we did not have information about the quality of instruction during specials, we did examine the amount of time spent and types of specials provided. Children spent an average of almost 3 hours per week in various types of specials, primarily physical education, library/media, music, computers, and art. We expected that when less time was spent in specials, there might be more materials and activities in those areas within the regular classroom, so that ECERS-R scores would be higher, and vice versa. However, there were almost no associations between use of specials and classroom quality scores, suggesting that the latter was not systematically underestimating children's opportunities in these areas. In contrast, the one significant finding was that classrooms with more specials time spent for physical education had better provisions in the areas of gross motor space, equipment, and supervision, not surprising given that these ECERS-R items are based largely on school-wide rather than classroom-specific provisions.

## Summary and Conclusions

In sum, children who participated in the More at Four Program exhibited continued growth in key skill areas from the beginning of their pre-k year through the end of kindergarten, often performing at or close to the expected average for their age by the end of kindergarten. Given that these children were selected for More at Four based on their risk status and, as expected, were performing below average for their age at entry into the program, these gains are notable. Moreover, the program focused on serving children who otherwise would not have been likely to participate in a pre-k program, and therefore, may have been likely to enter school even farther behind their peers without such early education experiences. These findings are consistent with a number of other large-scale studies that have found that pre-k participation was associated with sustained gains in language/literacy, math, and social skills through kindergarten. For several measures, children at greater risk made even greater gains, similar to a number of other studies. For children in the highest risk group, while they exhibited greater growth during this period in several areas, their skills still remained substantially below children at lesser risk by the end of kindergarten. For the highest-risk children, it may be that even more intensive services are required and/or that they may especially benefit from more than one year of such a program prior to kindergarten entry.

Although the quality of the pre-k classrooms was significantly higher than the kindergarten classrooms, most children exhibited continued growth despite these discontinuities, suggesting that the high quality experiences provided in More at Four helped prepare them for school and enabled them to adapt to the school setting. Given other research evidence that the trajectories established in the early grades predict continued school success (or failure), these findings suggest that the More at Four Program provides an early opportunity to help put children on the path toward school success.❖

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For more information about the More at Four Evaluation Project, including a full version of this report, visit the website at [www.fpg.unc.edu/~mafeval](http://www.fpg.unc.edu/~mafeval).

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## Other More at Four Evaluation Team Publications

Child and Program Characteristics of the North Carolina More at Four Pre-kindergarten Program: Year 1 (January–June, 2002) Report and Executive Summary

Evaluation of the North Carolina More at Four Pre-kindergarten Program: Year 2 (July 1, 2002–June 30, 2003) Report and Executive Summary

Evaluation of the North Carolina More at Four Pre-kindergarten Program: Year 3 (July 1, 2003–June 30, 2004) Report and Executive Summary

Evaluation of the North Carolina More at Four Pre-kindergarten Program: Year 4 (July 1, 2004–June 30, 2005) Program Characteristics and Services Report and Executive Summary

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