



## Does Head Start differentially benefit children with risks targeted by the program's service model? ☆



Elizabeth B. Miller\*, George Farkas, Greg J. Duncan

University of California, Irvine, United States

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### ABSTRACT

Data from the Head Start Impact Study ( $N = 3540$ ) were used to test for differential benefits of Head Start after one program year and after kindergarten on pre-academic and behavior outcomes for children at risk in the domains targeted by the program's comprehensive services. Although random assignment to Head Start produced positive treatment main effects on children's pre-academic skills and behavior problems, residualized growth models showed that random assignment to Head Start did not differentially benefit the pre-academic skills of children with risk factors targeted by the Head Start service model. The models showed detrimental impacts of Head Start for maternal-reported behavior problems of high-risk children, but slightly more positive impacts for teacher-reported behavior. Policy implications for Head Start are discussed.

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Since Head Start's creation in 1965 as part of the War on Poverty, its mission has been to improve the school readiness of low-income children (Zigler & Styfco, 2010). According to the U.S. Department of Health and Human Services (DHHS), school readiness means that "children are ready for school, families are ready to support their children's learning, and schools are ready for children" (U.S. DHHS, *Head Start Approach to School Readiness*, 2011). To encourage this goal, the Head Start program uses a "whole child" model, which aims to promote children's transition to school by enhancing their development through the provision of educational, health, and nutritional services to children and families. Head Start also engages parents in their children's learning and helps parents with their own educational, literacy, and employment goals with the belief that these too are important in promoting children's preparedness for school (U.S. DHHS, *Final Report*, 2010b).

Over the course of its nearly fifty year history, Head Start has evolved into a comprehensive service delivery program designed to serve poor children at risk in the targeted domains of cognitive development, socio-emotional development, health, and family functioning (Zigler & Styfco, 2010). This "whole child" approach

to school readiness offers multiple services to children and families with the expectation that the accurate targeting of services to needs, and the positive synergy among the services and benefits received, will act together to adequately prepare children for kindergarten.

In the 1998 reauthorization of Head Start, Congress mandated that the U.S. DHHS determine whether the program contributed to key outcomes in children's learning and development. The resulting Head Start Impact Study (HSIS) gathered data from a large, nationally representative sample of children assigned at random to Head Start centers or a comparison group between 2002 and 2006. The Final Report of the HSIS (2010a) found that at the end of the program year, Head Start significantly increased children's pre-academic skills ( $ES = .19-.22$ ), reduced behavior problems ( $ES = -.08$  to  $-.14$ ), and provided children access to dental care and improved children's overall health ( $ES = .11-.33$ ), compared with control group children. Although these effect sizes are small, they indicate that the program is improving children's development in a wide array of areas (U.S. DHHS, *Final Report*, 2010b) and they are consistent with a recent meta-analysis of 57 Head Start studies from 1965 to 2002, which found the average program-level effect size to be  $.27 SD$  (Shager et al., 2013). The HSIS report (2010a, 2010b) also provided some evidence of differential program effects among key subgroups. For example, Head Start impacts were larger for Dual Language Learners than monolingual-English speakers on a measure of receptive vocabulary.

The current study extends the examination of the differential effects of Head Start in novel ways (Barton, Spiker, & Williamson, 2012; Bloom & Weiland, 2015; McCoy, Morris, Connors, Yoshikawa,

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\* Corresponding author.

E-mail address: [ebmiller@uci.edu](mailto:ebmiller@uci.edu) (E.B. Miller).

& Gomez, 2015; Miller, Farkas, Vandell, & Duncan, 2014). Specifically, we test whether the program is meeting its conceptual goals of promoting school readiness outcomes for children whose risk profiles matched those targeted by the Head Start service model. Using Head Start's "whole child" approach, we first created ten conceptually based risk factors in four broad areas based on the Head Start program model: (1) children's pre-academic skills; (2) children's behavior problems; (3) children's health; and (4) family functioning. We next estimated a set of regressions in which each baseline risk factor was individually interacted with assignment to Head Start. Then we created a total risk index by summing the ten items and estimated regressions in which this total index was interacted with assignment to Head Start. Positive coefficients on these interaction variables would indicate larger program benefits for children in a given risk group compared with other children.

Since school readiness may be conceptualized as a continuum, and given that children at risk in these domains are typically the farthest away from being ready for kindergarten, it follows that these higher-risk children would stand to gain more from a program (Head Start) that explicitly targets these risk domains compared with an alternative one. That is, because Head Start strives to create an environment that improves the multiple needs of children, individuals that fit the package of services best, i.e., children at greatest risk in the targeted domains, should experience larger positive program impacts than similar children in the control condition.

**Theoretical framework.** The overall framework of this study draws on two complementary developmental theories. The first, bioecological theory (Bronfenbrenner & Morris, 2006), posits that human development results from the interplay of *Process*  $\times$  *Person*  $\times$  *Context*  $\times$  *Time*. The core of the model is *Process*, which constitutes interactions between an organism and their environment known as proximal processes. The effects of these proximal processes on developmental outcomes systematically vary based on the characteristics of the person and their surrounding environmental context. Consequently, children and their families respond in varying ways to the program treatment environments they encounter (i.e., treatment effect heterogeneity). With an environment like Head Start, and the economically disadvantaged families and children it serves, bioecological theory would predict that the program will not affect all children in the same way since the fit between the child's needs and what the program provides is likely to differ across families, children, and outcomes. Therefore the match between children's characteristics, including prior experiences and needs, and the services offered by Head Start is crucial in determining whether the program is appropriate and successful for a given child, creating a source of heterogeneous treatment effects (Imbens & Angrist, 1994).

The second developmental theory is the cumulative risk model. In recent decades, a great deal of work has been conducted on risk and protective factors for infants and preschool children who grow up in adverse conditions (see Werner, 2001 for a review). Often these factors were based on a single indicator of risk measured at the family level. Examples of such risk factors include economic hardship (Egeland, Carison, & Sroufe, 1993; McLoyd, 1998); parental mental illness (Cicchetti & Toth, 1998; Seifer, Sameroff, Baldwin, & Baldwin, 1992); substance abuse (Werner, 2004); teenage motherhood (Furstenberg, Brooks-Gunn, & Morgan, 1987); and child abuse and neglect (Farber & Egeland, 1987).

Cumulative risk models account for the fact that some children are exposed to multiple dimensions of family-level risk and that the developmental outcomes for these children might be most compromised. These models traditionally include factors such as poverty, single motherhood, low levels of parental education, and unemployment, which tend to cluster within the same families (Masten et al., 1995) and may be conceptually and empirically difficult to examine individually (Burchinal, Roberts, Hooper, &

Zeisel, 2000; Evans, Li, & Whipple, 2013). Studies using cumulative risk models have demonstrated that the more risk factors a child is exposed to, the more likely they are to experience a range of developmental problems, with the effects multiplicative rather than additive (Garnezy, Masten, & Tellegen, 1984; Rutter, 1987; Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987; Sameroff, Seifer, Baldwin, & Baldwin, 1993; Sameroff, 2006). The cumulative risk model complements bioecological theory as multiple risk factors may sufficiently disrupt the proximal processes between a person and their environment necessary for healthy development, as well as inhibit alternative sources of these proximal processes (Evans et al., 2013).

Despite the potential for cumulative risk factors to harm children's development, many of the above-mentioned studies emphasized how many high-risk children overcame trying circumstances to have good developmental outcomes through protective mechanisms that buffered their stressful situations. In fact, both Werner (1997) and Sameroff (2006) explicitly mentioned Head Start as a program that could serve as a protective mechanism for children at risk in a wide array of developmental areas, which is why theoretically, we might expect program benefits to be greatest for those most in need. Thus, cumulative risk models have been especially useful in studies examining potential protective factors because they provide a more comprehensive and precise representation of a child's disadvantage than examining each factor individually (Garnezy et al., 1984; Masten et al., 1995; Rutter, 1987; Seifer et al., 1992; Wright, Masten, & Narayan, 2013).

This is the theoretical approach we have taken in our study, which focuses on the premise that effective policies must fit with as many of individual children's developmental needs as possible in order to succeed. Accordingly, using individual risk factors first and then a cumulative risk index, we examine how well Head Start's "whole child" model differentially benefitted children at risk. In particular, we ask whether the program differentially benefits children at greatest risk in the domains targeted by Head Start's comprehensive services. In our empirical work, this translates into expectations of larger treatment effects for these higher-risk children relative to higher-risk children in the control condition.

**Cumulative risk models and differential program impacts.** There is a rich literature on differential impacts using cumulative risk models. We discuss some recent studies here, which used cumulative risk to examine differential program impacts through experimental variation. These studies, including those based on the HSIS, highlight how a particular program may have served as a protective factor for children at risk, buffering against their adversity.

The Final Report of the HSIS (U.S. DHHS, 2010a, 2010b) and the Early Head Start Research and Evaluation (EHSRE) study (Raikes, Vogel, & Love, 2013) both used a cumulative risk index comprised of five family-level items – receipt of TANF or Food Stamps; neither parent in the household had a high school diploma or a GED; neither parent in household was employed or in school; the child's biological mother or caregiver was a single parent; and the biological mother was teenaged at the child's birth – to test for differential program effects. Families were characterized according to whether they had 0–2 (no/low), 3 (moderate), or 4–5 (high) risk factors. In the HSIS, Head Start children from high-risk households experienced sustained cognitive outcomes through the end of 1st grade relative to high-risk children not offered a Head Start enrollment slot, and Head Start children from moderate-risk households experienced more positive socio-emotional impacts. There were no differential impacts for Head Start children from low-risk households compared with controls.

In the EHSRE study, program impacts were relatively weak at age five for children from homes characterized by no/low risk as well as for children from homes with high risk. Children from homes characterized by moderate risk had the strongest program impacts

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