THE HEALTH COMPONENT OF HEAD START: POTENTIAL IMPACTS ON CHILDHOOD OBESITY, IMMUNIZATIONS, AND DENTAL HEALTH

A Dissertation

by

TANYA YVETTE BANDA

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2008

Major Subject: School Psychology

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Approved by:

Chair of Committee,	Michael Ash
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ABSTRACT

The Health Component of Head Start: Potential Impacts on
Childhood Obesity, Immunizations, and Dental Health. (December 2008)
Tanya Yvette Banda, B.S., Texas A&M University
Chair of Advisory Committee: Dr. Michael Ash

Head Start, an early intervention program administered by the Administration for Children and Families of the Department of Health and Human Services, offers children of low-income families comprehensive services in an effort to even the playing field with their more advantaged peers upon entering kindergarten. Despite the many areas that Head Start addresses, evaluative efforts continuously focus primarily on cognitive gains as a result of Head Start as an intervention. This study examined the potential long-term effects of the health component of Head Start. More specifically, the study investigated whether Head Start impacts a family's ability to make positive changes in the home in the way of preventive health measures with regard to childhood obesity, immunizations, and dental health, three important areas of childhood health.

Participants in the research study included children enrolled in Head Start between 2004 and 2006, and children on the waiting list within the same time. Follow-up interviews were conducted with families in both groups that inquired about health behaviors specifically related to childhood obesity, immunizations, and dental health. The Head Start (HS) Group and Waiting List Control (WLC) Group were compared to

determine if Head Start made a difference in a family's probability of engaging in more proactive health measures. Responses of the HS Group were also compared with responses from their initial health assessment upon enrolling in Head Start to determine if they demonstrate positive changes.

Results did not support hypotheses, and in many instances the WLC Group demonstrated better proactive health measures than the HS Group. Because of operational difficulties, there is limited inference about the impact of the Head Start program. Possible contributors to the results include a small sample size due to the mobility of the target population and overrepresentation of Hispanic children in the study. Limited differences observed between the HS and WLC groups confirms the importance of further investigating the long-term impact of Head Start in areas other than cognitive gains.

DEDICATION

My successes in life have been possible because of many incredibly special individuals, but two wonderful women merit a wealth of gratitude and praise for their contribution to who I am today. To my mother, who has continually been my support, motivator, and strength; who taught me at an early age that anything in life is possible if I believe in myself, thank you for teaching me the value of education and for encouraging me to pursue my dreams even when it meant distance from you. But most importantly, thank you for always knowing how to stay close to my heart even when miles kept us apart. To my grandmother, who helped raise me to be a headstrong individual with unwavering goals, thank you for always teaching me the incredible strength of a woman. Thank you for encouraging me to be who I wanted and not ever taking "no" for an answer. A part of my heart will always be yours. I dedicate this study and the completion of my degree to these beautiful outstanding women, without whom I would not be where I am today. My grandmother gave me the inspiration, my mother gave me the strength; my grandmother gave me the heart, my mother gave me the soul. Together you both gave me an infinite amount of reasons to treasure my childhood and continue in life with the heart of a child, and with your support I have found the strength to venture farther in life than I could have dreamed of (and I promise I'm not done!). *En mi corazón siempre me acordare del amor y apoyo que me han dado. Gracias por ayudarme encontrar en mi el esfuerzo para realizar mis sueños.* [Translation: I will always treasure the love and support you have given me. Thank you for helping me find the strength to achieve my dreams.]

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apartment, to making sure I always made it back to College Station safely, to always telling me how proud of me you are – and you're always willing and ready to lend me a hand. Thank you, "big brother," for your love and support along the way. A wealth of gratitude to my aunt and uncle, Jayne and Ramon Medina, who have been a tremendous source of love, support, and guidance. Words could never fully express how instrumental you have been throughout my entire educational career, from the moment I stepped foot in Aggieland to the day I stood to defend this dissertation.

And to my dissertation committee – my chair, Dr. Mike Ash, and members, Dr. William Rae, Dr. Cynthia Riccio, and Dr. Rob Heffer – thank you for helping me finalize this chapter in my journey to becoming Dr. Tanya Yvette Banda. Dr. Ash, you were my silent navigator; you kept me focused on the destination but allowed me to find my own way there, and for that I will always be grateful.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

As family profiles change throughout history, programs and services are developed and modified to meet the changing needs of children and families. Family structures have changed significantly within recent decades; two-income households are more common, single-parent homes have increased, and child care programs are always in much greater demand than they are available. It is difficult to imagine an era when out-of-home child care was not routinely sought out as it is today, but the truth is, "Day care emerged out of pity in nineteenth-century Philadelphia – pity for children who played on city streets while their mothers went out to work to support them" (Rose, 1999, p. 13). Child care resulted from philanthropic efforts to care for children whose mothers could not otherwise care for them due to financial burdens and the harsh realities of poverty that forced them into the workplace. In an effort to discourage women from pursuing work rather than caring for their families, the provision of "day nursery" services was restricted only to women who worked out of absolute economic necessity. These "day nurseries," as they were called, began in the late nineteenth century and alleviated one of the struggles faced by poor, abandoned, and widowed women. Rose (1999) cited a poem that was featured in a brochure for the dedication of a new building of the Strawberry Mansion Day Nursery in 1956; this poem illustrates the beginnings of the day care movement:

This dissertation follows the style of the *Journal of School Psychology*.

D.D.D. was the key to the code

Desperate, deserted and destitute.

The louder the wails, the shorter the road,

That led to this child care institute. (p. 30)

Well before the development of these day nurseries, however, was the Boston Infant School, dating from 1928 (Steinfels, 1973). The Boston Infant School accepted children between the ages of eighteen months and four years. "The trustees justified their intent to open what might have been the first day center in America by pointing out that 'such a school would be of eminent service, both to parents and children. By relieving mothers of a part of their domestic cares, it would enable them to seek employment.' At the same time the children 'would be removed from the unhappy association of want and vice, and be placed under better influences…'" (Constitution and Bylaws of the Infant School Society, Boston, 1928, as cited in Steinfels, 1973, p. 36). Twenty years later, immigrated Germans introduced the kindergarten movement to the U.S., and the first kindergarten for English-speaking children was opened in Boston in 1860 (Steinfels). While kindergarten was developed out of primary concerns for the education of young children, day nurseries were a place of physical care for working mothers.

While day care was initiated as a welfare measure, political events legitimized its need among the greater population, and child care was no longer reserved for the poor. The Great Depression and World War II forced revisions in perceptions of women's roles and responsibilities within the family. Economic burdens across social classes

resulted in women having to assist with financial needs, and day cares had to ignore their stringent criteria and no longer reserve their programs for children of poor mothers. The federal government, in an effort to promote employment during these times of need, sanctioned child care to allow women the opportunity to join the workforce (Boschee & Jacobs, 1998). It was not the government's intention for working women to be a permanent trend in U.S. society, but rather they were seen as a temporary means to an end. During World War II, the Kaiser Shipyards in Portland, Oregon opened the first American employer-operated day care center in an effort to reduce absenteeism among their working mothers (Boschee & Jacobs, 1998). Although this center was closed following war's end, employer-based child care centers continue today.

Women's wage work continued in the post-war era as employment became another method for women to fulfill their responsibilities as mothers and providers. As described by Rose (1999), "Changes in conceptions of women's work, children's needs, and public responsibility for families were gradually transforming day care's meaning (p. 181)…Day care, which had been justified during the war as a weapon in the defense effort, now had to be redefined as a legitimate responsibility of government in peacetime" (p. 188). As day care moved to employ an educational component, it was no longer seen as simply a relief effort for mothers, but as a benefit for the children as well.

The trend of working women has persisted, no longer simply out of necessity, but many times as a preferred lifestyle. As such, day care is no longer reserved just for the poor, but also for families who require quality care for their children throughout the

work day due to employment, or otherwise. And the same questions – Does day care encourage or discourage parental responsibility? Are the centers meeting the children's nutritional, medical, physical, and educational needs (Steinfels, 1973) – apply now as they did decades prior. The reality is subsidized child care continues to be a vital service for low-income families who do not have the financial means to secure private child care. Despite the growing number of private day care centers, the need for subsidized child care persisted long after the day nursery movement and the post-war era. Head Start was developed in the post-war era, a compensatory education program that "rekindled government interest in financing preschool education; it directly connected child care with educational rather than custodial activates; it popularized the notion that early childhood education was appropriate for all children; and it helped turn the climate of opinion about proper care for young children" (Steinfels, 1973, p. 85).

Head Start

Head Start, a federal matching grant program established in 1965, was created as part of Lyndon B. Johnson's efforts to help fight the "War on Poverty." By offering children of low-income families comprehensive services, Head Start hopes to provide children the opportunity to enter school on an even playing field with their more advantaged peers and compensate for the unequal realities of poverty. Head Start is governed by the Administration for Children and Families of the Department of Health and Human Services and is now one of the nation's largest early intervention programs for low-income children and families. Head Start's goal is to prepare children for kindergarten by offering them comprehensive services targeting educational, medical,

dental, mental health, nutritional, and social needs. This "whole child" approach attempts to mitigate the risk factors associated with poverty to provide these children greater opportunities to succeed. Having been developed during the 1960s when environmental theoretical orientations were gaining support, Head Start recognized the vital role of children's environments on their overall development. Consequently, among the many goals of Head Start was, and continues to be, the promotion of children's *social competence* through a holistic approach of education, parental involvement, social services, and health (Zigler, Piotrkowski, & Collins, 1994).

Since Head Start's beginning in 1965, family structures have transformed tremendously. There are a higher number of single parent households, and the number of women in the workforce has increased. From 2000 to 2004, the number of children living in poverty increased by 13.4 percent (Woolf, Johnson, & Geiger, 2006). Zigler and Styfco (2006) acknowledged the changes seen in Head Start enrollment in their book, *The Head Start Debates*: "The children and families who attend Head Start today are different in significant ways from that first cohort in 1965: their cultural and language backgrounds are more diverse; the children's parents are younger and more likely to be single and employed; and the poverty they experience has grown uglier, with welfare reform adding new stresses" (p. xix). Such changes have consequently increased the demand for early childhood programs and education for children of low-income families. This demand is clearly illustrated in Head Start's enrollment, which has increased by over 60 percent in the last 40 years. As of 2007, Head Start had served over 25 million children since its inception in 1965 (Head Start Program Fact Sheet,

2008). Society continues to change and early childhood intervention and education continues to be an important element for healthy development for children from impoverished families. In order to address this increasing need, the federal government has accordingly increased the number of, and funding for, programs providing these services. Head Start continues to be guided by the belief that:

> …poverty is not just an occurrence; rather, it is a state within which unpleasant complexities can hinder the successful development of children. Head Start recognizes that these children's development depends upon a varied and comprehensive approach. With meeting the needs of children in poverty as its goal, Head Start – with its Program Performance Standards – is guided by regulations to ensure provision of services that best offset the grim realities of poverty. (Smith et al., 2003, p. 4).

With the number of children enrolled in Head Start and the amount of money being allocated to provide these services, program effectiveness has been the focus of much research. The federal government invests more in Head Start, which was funded at $6.5 billion in fiscal year 2002, than any other early childhood education and care program (Department of Health and Human Services, *Head Start Impact Study: First Year Findings*, May 2005), creating an impetus for research that justifies this expense with findings of positive outcomes. However, as was found in the Descriptive Study of Head Start Health Services (Keane, O'Brien, Connell, & Close, 1996), the majority of research conducted is devoted to the educational aspects of the program, a fact Zigler, Styfco, and Gilman (1993) noted: "In spite of the many goals of Head Start, initial

research focused almost exclusively on how much the program could raise children's intelligence test scores" (p. 9). As research on cognitive gains continued, researchers began to identify a "fade-out" on the gains children experienced intellectually, which Bronfenbrenner attributed to the brevity and discontinuity between the program and the child's home and family experiences (Zigler et al.). Reactions to the research findings of this "fade-out" jeopardized Head Start's reputation, and the Office of Economic Opportunity considered implementing a three-year phase-out of Head Start (Zigler et al.). "Ironically, the planners of Head Start had never intended the program's focus to be highly improved IQ test performance. The original plans emphasized that Head Start's mission was to enhance the child's overall social competence, a construct that includes not only the elements of formal cognition and academic achievement, but also physical health (without which optimal performance cannot occur) and such motivational features as self-esteem and a sense of personal efficacy" (Zigler et al., p. 10).

One specific Head Start domain consistently neglected in program effectiveness research is the health component. A search by topic of the Office of Head Start's Research Bibliography resulted in 1,109 reports and studies on cognitive development, but only 472 on health (as of June 16, 2008); and the majority of existing research on the Head Start health component is largely outdated. Approximately 75 percent was conducted prior to 1998, the year in which Head Start made considerable changes to their program performance standards and requirements for the health component. Significant elements were added to the health component to address many of the health concerns children face today. Furthermore, a large portion of the existing research does

not specifically focus on the effects of the health component, but rather on specific health education and prevention programs implemented within Head Start centers. Overall, whether health component influences are sustained beyond Head Start graduation has not been sufficiently investigated since changes to the performance standards were made.

Zigler and Lang (1983) recognized that while health services in Head Start are a hallmark of an early intervention program, such services are uneven across programs and should be improved or maintained at the higher levels. Since publication of this research, Head Start has made significant changes to the program performance standards and requirements of the health domain in order to not only improve quality of services, but also address some of the common health concerns found in low-income pediatric populations. Given the changes that have occurred not only in the nature of today's poverty, but also in the program services and efforts of Head Start, more recent and more thorough data is needed to assess the extent of the impact of the health component on the children these programs serve.

Health Component of Head Start

Head Start developers envisioned a program that would positively impact children across the various domains that have been recognized as vital for normal development (Zigler et al., 1994); one of these areas is overall physical health. The concern of impoverished children's health led Head Start's original planning committee, which was headed by Dr. Robert Cooke, the pediatrician-in-chief at Johns Hopkins Hospital, to explicitly include a health component in the program (Hale, Seitz, & Zigler,

1990; Zigler et al., 1994). They recognized that "environmental enrichment would not be of much benefit to children who were ill or hungry" (Zigler & Anderson, 1979, in (Zigler et al., 1994) . There is extensive literature and research that suggests healthy children fare better in life than their non-healthy counterparts, and even more evident is that children of impoverished homes do not share the same quantity or quality of care with their more advantaged peers. Ding, Lehrer, Rosenquist, and Audrain-McGovern (2006) found that the impact of poor health on overall achievement is large, and the impact of health on overall positive development and success in school becomes even more significant for children who grow up in impoverished communities. "The prevailing reality is that [health] resources and services frequently do not reach children in poverty" (Smith et al., 2003, p. 4). Smith et al. note in their position paper, "Because Head Start was developed with the conviction that children in poverty are less likely to receive health care and that children must be healthy and well nourished in order to learn, the founders of Head Start created a system that would increase these children's chances for success by decreasing their risk factors" (p. 4).

Social competence, the goal of Head Start, refers to an inherent belief that optimal health is vital to successful social and cognitive functioning (Keane et al., 1996). It is Head Start's ultimate goal to help develop children's social competence so they may continue to make positive choices. In order to do this, program performance standards are in place to ensure all programs work towards and adhere to the same goals. Performance Standards for the Head Start health component were established in 1975 and reauthorized in 1998. All Head Start programs are required to adhere to the

performance standards, but individual programs are responsible for determining how these requirements are met. The health component was designed in a manner that emphasizes health education and prevention, as well as early identification and treatment of health problems. In addressing Head Start children's health needs, "programs engage in three levels of activities: assuring that children get screenings and needed health services, that children receive preventive care, and that both children and families learn to take responsibility for their own health care and health-related behaviors" (Keane et al., 1996). The following is a summary of the Program Performance Standards, as outlined by the Administration for Children and Families. Head Start Delegates and Grantees are required to:

- obtain a complete physical examination, including vision and hearing screenings, every two years beginning when they are three years of age, and ensure all children are up to date on age-appropriate well child care, including immunizations, medical, dental, and mental health care;
- obtain a linguistically and age-appropriate screening of developmental, sensory, behavioral, motor, language, social, cognitive, perceptual, and emotional skills, no later than 45 days following entry into the program, and address any identified health needs;
- ensure each child has an ongoing source of continuous accessible health care;
- identify, in collaboration with the child's family, children's nutritional needs, taking into account relevant nutritional-related assessment data and information about eating patterns, special diets, and medically related nutritional concerns;

- provide meals and snacks that provide ½ to ¾ of the daily nutritional needs (depending on the length of the program) for each child enrolled in a center-based, full-day program;
- serve all children in morning center-based settings a nourishing breakfast if they have not received breakfast at the time they arrive;
- provide foods high in nutrients and low in fat, sugar, and salt;
- appropriately schedule and adjust, where necessary, meals and snacks to ensure individual needs are met;
- provide nutritional services that contribute to the development and socialization of enrolled children by:
    - providing food variety that broadens each child's food experiences;
    - not using food as a punishment or reward and encouraging, but not forcing, each child to eat or taste his or her food;
    - allowing sufficient time for each child to eat;
    - serving meals "family style;"
    - providing opportunities, as developmentally appropriate, for involving children in food-related activities, such as preparation and serving meals;
    - providing parent education activities that include opportunities to assist individual families with food preparation and nutritional skills. (U.S. Department of Health and Human Services, 2008)

Promotion of proper preventive health measures is an integral aspect of the health component of Head Start. Head Start focuses efforts on not only helping families

identify and meet children's health needs, but also on teaching children and families appropriate healthy behaviors. "For children, these activities were typically presented as educational units, or more likely integrated into the routine activities of the local program" (O'Brien, Connell, & Griffin, 2004). For parents, educational opportunities are provided in the form of health education programs and by involving the parents in the everyday aspects of Head Start.

Childhood Obesity, Immunizations, and Dental Health

Head Start purports to serve our nation's disadvantaged children – children residing in homes of poverty, often deprived of experiences children need for optimal growth and development. The issue of health, then, is of greatest importance to our nation's poor. Research repeatedly illustrates the disparities that exist in health between children living in poverty and their more advantaged peers. Furthermore, poor health has consistently been shown to have adverse effects on the development of a child at multiple levels, emphasizing the importance of early intervention and identification of health concerns. In a recent study conducted by Ding et al. (2006), results confirmed that the impact of "poor health on academic achievement is large" (p. 31), and poor health is highly correlated with low-income families, the target population of Head Start programs. An analysis of poverty rates in America published in the American Journal for Preventive Medicine (Woolf et al., 2006) describes the profound implications of poverty, many directly related to health: greater rates of smoking, inactivity, and obesity; neighborhoods not conducive to healthy lifestyles; lack of health insurance; higher rates

of chronic illness; and less opportunities for preventive measures, to name a few. A study published in 1985 in Health Services Research (Starfield & Budetti, 1985) stated:

> A powerful correlate of ill health in childhood is family income. Illness is more common among poor children and, even more strikingly, it is more severe when it occurs. Clinical and epidemiological studies indicate that poor children are twice as likely to have low birth weights, twice as likely to contract illnesses such as bacterial meningitis, three to four times as likely to lack indicated immunizations in the preschool period, two to three times as likely to contract illnesses such as rheumatic fever, two to three times as likely to have iron-deficiency anemia, two to three times as likely to have hearing problems, 50 percent more likely to have corrected vision difficulties (although they are less likely to have visual problems when testing is performed without the child's usual correction), nine times as likely to have elevated concentrations of lead in their blood, and 75 percent more likely to be admitted to a hospital in a given year. (p. 45)

Starfield (1992) also states that “low-income children are more likely to be affected by virtually every threat to their health, and when they do become ill, they get sicker and die at higher rates than other children. Although causal conclusions cannot be drawn, the evidence for the association between low income and ill health is compelling. A more recent study found statistically significant disparities between poor adolescents’ health and the health of their higher income counterparts (Newacheck, Hung, Park, Brindis, & Irwin, 2006). There is additional evidence that implicates poverty in the

development of asthma. For children younger than five years, asthma was more prevalent in lower income, larger-sized families with fewer rooms in their homes, and lower-income children were also more likely to be hospitalized for asthma-related reasons (Halfon & Newacheck, 1993).

Many factors associated with poverty can be speculated to have an impact on health, such as greater life stressors, barriers in access to health care, fewer opportunities for preventive care, and even environmental factors such as the conditions of the neighborhoods poor families tend to live in. Knowing the adverse effects of ill health, especially on children, it is no surprise, that health assessments and health education are a significant component of the Head Start program. Novello, Degraw, and Kleinman (1992) described the bidirectional connection between education and health, one which Head Start has been attempting to address since its inception in 1965: “children must be healthy in order to be educated and children must be educated in order to stay healthy” (p. 1).

The importance of comprehensive health services in an early childhood intervention program such as Head Start is evident in the rising health concerns of children. The foresight of Head Start founders who envisioned a program that addresses the health needs of children has been sustained, as there is now compelling evidence for the associations between poverty and health status, and between health status and learning (Brooks-Gunn & Duncan, 1997; O'Brien et al., 2004; Starfield, 1992; Woolf et al., 2006). Even more so, they are of critical importance to children raised in impoverished environments. Childhood obesity, immunizations, and dental health are

three health issues common in recent literature and causing alarm in children's current health status. They are also three health issues addressed within the Child Nutrition and Child Health and Development guidelines of Head Start.

Childhood Obesity

The increasing prevalence of obesity in America's children has led to the identification of childhood obesity as a national epidemic. Childhood obesity has been the center of public policy and research for the past several years. The Committee on Prevention of Obesity in Children and Youth stated in *Preventing Childhood Obesity: Health in the Balance* (2005) that the rate of childhood obesity has more than doubled for preschool children and adolescents, and more than tripled for children between the ages of six and eleven years. "At present," authors state, "approximately nine million children over six years of age are considered obese" (p. 1). Dehghan, Akhtar-Danesh, and Merchant (2005) found that 11 percent of children in the U.S. are obese, and an estimated 70 percent will grow up to become obese as adults. The implications of such findings are critical for the healthy development of children, but even more significant for low-income and minority populations, as Anderson and Butcher (2006) note that obesity rates are higher among minority and low-income children.

Daniels (2006) points out that children are "more vulnerable to a unique set of obesity-related problems because their bodies are growing and developing (p. 48)." He notes in *The Consequences of Childhood Overweight and Obesity* (2006) that childhood obesity can accelerate the development of obesity-related cardiovascular disease. Because the onset of obesity in childhood creates early damage to a child's heart and

blood vessels, “the current generation of children may suffer the adverse effects of cardiovascular disease at a younger age than previous generations, despite the advent of new drugs (p. 51).” Obesity in childhood has also been found to be associated with obstructive sleep apnea, which can lead to daytime sleepiness and decreased physical activity, thus harming a child’s overall school performance. Obstructive sleep apnea has also been found to be associated with learning disabilities and memory deficits (Daniels, 2006). Koplan, Liverman, and Kraak (2005) indicate that childhood obesity can lead to increased risk of diabetes, hypertension, infertility, and digestive diseases. In addition to the health complications caused by childhood obesity, it can also be detrimental to the mental health of a child, including lowered self-esteem, poor peer relations, and poor social-emotional development.

As described by the Committee on Prevention of Obesity in Children and Youth (2005), schools are in the ideal position to positively impact children’s nutrition and healthy lifestyles. “Both inside and outside of the classroom, schools present opportunities for the concepts of energy balance to be taught and put into practice as students learn about good nutrition, physical activity, and their relationships to health; engage in physical education; and make food and physical activity choices during school meal times and through school-related activities” (p. 13-14). While the specific mechanisms leading to childhood obesity are not yet explicit, studies have confirmed that, in addition to genetic factors, childhood obesity is highly correlated with specific environmental factors, such as lifestyle preferences and cultural environment (Dehghan et al., 2005). The current childhood obesity epidemic and its demonstrated detrimental

effects justify the emphasis on nutrition in Head Start programs. Because of the nature of obesity, its long-term effects, the increasing difficulty to overcome it in adulthood, and its dependence on nutrition education, early childhood institutions are the ideal environment for early intervention and prevention. Teaching children and families about the significance of nutrition and how to make healthy food choices, Head Start can help positively impact the families' home nutrition instead of merely providing children healthy meals in the classroom.

Immunizations

Despite increases in overall immunization rates in the United States, disparities continue to exist for lower income families. Childhood immunizations serve to prevent diseases that can have many social and economic implications. Sick children may have to miss several days at a time for school, and parents will often have to stay home from work to care for them. In addition, the diseases may lead to multiple doctor visits and hospitalizations. As is the case with many health-related factors, children of lower-income families have lower immunization rates (Centers for Disease Control and Prevention, 2008). Childhood immunizations are especially of concern because of children's high susceptibility to disease. Klevens and Luman (2001) found that 1999 National Immunization Survey data revealed substantial differences in the immunization rates of children living above and below the federal poverty level across all recommended vaccines. These disparities can be attributed to a multitude of factors. Niederhauser and Stark (2005) found, through an analysis of many research studies concentrating on childhood immunizations, some of these factors to include maternal

education (lower than a high school diploma), beliefs about immunizations, ethnicity, and marital status. Access to health care for low-income families is also a barrier to obtaining timely immunizations.

When children are not immunized by the recommended age, they remain vulnerable to diseases and have the potential to infect other children. Children under five are especially susceptible because their immune systems have not built up the necessary defenses to fight infection. One of the biggest problems is getting parents to bring their children to a healthcare provider for immunizations *before* they are of school age. Public school requirements mandate that children have up-to-date immunizations before enrolling. However, by age five, when most children are preparing for their first year of school, children should have *already* received the majority of their immunizations. By the time a child is two years old, he/she should have received approximately 80 percent of the vaccines required for school enrollment. Instead, many families wait until the time of school enrollment, almost three years after the recommended age.

Dental Health

As is the case with many health-related concerns, the dental care needs of children from low-income families persistently go unmet. Oral health, in general, ranks as one of the greatest unmet health-care needs for children in the United States (Hughes, Duderstadt, Soobader, & Newacheck, 2005; Jones et al., 2000), being particularly problematic for children of low-income and impoverished families. In 1985, Starfield and Budetti published an article citing the dental needs of poor adolescents as being four

times more likely to go unmet than those of middle- and higher-income families. The Surgeon General, recognizing the emerging evidence of poor oral health being associated with additional health complications, such as heart disease, called for action on oral health in America in 2001. The rationale included consistent findings of disparities in oral health in the U.S., noting that children of poor families suffer twice as much from dental caries than do their more affluent counterparts. Newacheck, Hughes, Hung, Wong, and Stoddard (2000) found that out of 4.7 million children experiencing one or more unmet health needs each year, unmet dental needs were the most prevalent. Like most health-related issues, prevention of dental health complications is best accomplished through intervention and educational measures at an early age. "To reduce caries rates among high-risk children, it is important that preventive dental programs and strategies be put into place to overcome barriers that have reduced the ability of prevention efforts to reach lower income groups in the past (Kanellis, 2000)." Given that evidence supports a relationship between low-income preschoolers and being at risk for dental caries, and studies of Head Start preschool children report high rates of dental caries (Kanellis, 2000), Head Start programs appear to be a logical avenue for providing dental health treatment and subsequent dental health education. Because children of poor backgrounds and children of parents with less than a high school education have demonstrated an increased likelihood to have "emergency" dental visits as compared with non-poor children and those with parents of more than a high school education (Edelstein, 2000), there is an apparent need for emphasis on preventive, proper dental care. Teaching healthy lifestyles and promoting health-conducive environments

can assist in the prevention of oral health complications and abate the effects of existing concerns.

Ironically, children of low-income families have the highest rates of dental insurance, yet report the lowest frequency of dental visits, despite the fact that low-income preschoolers experience higher rates of dental disease (Edelstein, 2000). Dental health can have significant consequences for children, especially considering the stage of their development at the preschool age. Dental disease can lead to diminished growth; facial and dental pain, as well as infection; and damage to their developing permanent teeth. Behavioral problems can also arise from untreated oral health problems due to the child's inability to sleep, eat, or play normally (Edelstein, 2000). Edelstein notes that dental disease in young children has been found to be associated with "failure to thrive" due to difficulties with feeding. Acs, Lodolini, Kaminsky, and Cisneros (1992) report that dental care for severe dental caries in young children reverses the inappropriately low body weight.

The Health of Hispanic Children

As Hispanic families continue to represent larger percentages of the U.S. population, their needs become increasingly evident in the literature. Hispanic families and children are continuously overrepresented in our nation's poor populations and, consequently, are identified as having some of the greatest health needs. "Latinos of all ages are more apt to live in poverty than non-Latinos (Mendoza, 1994)." Mendoza reports that while Latino children made up 11.6 percent of all children (in 1992) in the United States, they represented 21.5 percent of all children living in poverty. This same

report documented access to health care as a critical concern for Latino children. Uninsured Latinos were less likely to identify a primary care physician, less likely to have visited a physician within the previous year, and less likely to receive routine physical examinations. Given the identified trends in Hispanics' socioeconomic status, it is of no surprise, then, that Hispanic children comprise a quarter of all Head Start enrollees, and many are likely to demonstrate special needs, especially in the way of language skills (Janet Currie & Thomas, 1996). In Mejia et al. (2008), authors cite documented disparities of the dental health of Hispanic families, reporting that individuals of Hispanic origin demonstrate the lowest dental care utilization of any other ethnic population. Individuals of Hispanic origin are less likely to have a dental visit in the previous year, and they report fewer diagnostic, preventive, and prosthetic visits with increased oral surgery than their white counterparts.

With the increasing representation of Hispanics in U.S. communities, the increased likelihood of Hispanic children living in poverty, and the noted health disparities, early intervention and identification programs are of particular importance to Hispanic children. The focus of such programs targets the needs specific to these families, that continually go unmet because of cultural, financial, and environmental barriers. Further understanding of effective interventions that help these children grow up to be healthy, successful students is vital not only for them and their families, but also for the providers who serve them.

Study Purpose and Significance

The purpose of this study is to evaluate the potential impact of the health component of Head Start on children enrolled in the program. Research has established that efforts focused on improving health habits among children, such as dietary habits, do indeed produce positive health benefits (Wilson & Evans, 2003). An ecological model of health promotion emphasizes the need to consider multiple variables – intrapersonal, interpersonal, institutional, community, and public-policy influences. The manner in which Head Start implements health promotion works to involve the community, institutional, intrapersonal, and interpersonal realms to positively influence the child's health. Becker's Health Belief Model (Wilson & Evans, 2003) emphasizes the importance of attitudes and beliefs in health behavior change, another area Head Start attempts to influence in both children and parents. It would be beneficial, then, to know if the approaches Head Start takes to impact children's health are sustained after they graduate from the program and enter elementary classrooms or other educational settings. The nature of the health component almost guarantees children will be positively impacted during the year they are enrolled. They receive multiple screenings and are provided additional services, as needed, through collaborative efforts with medical professionals. In addition, Head Start aims to educate the families and children about the importance of preventive care and healthy lifestyles. The crucial question, however, is whether Head Start families are able to generalize these lessons to their everyday lives and sustain these efforts after they no longer have the support and

guidance of Head Start staff and services to ensure health needs are addressed and preventive measures are taken.

The goal of this study is to focus on Head Start's impact on children's health, not *while* children are enrolled, but rather two to four years *after* leaving Head Start. Research has indicated that the impact of Head Start on children during their year of participation in the program is not only inevitable due to the services provided, and as such, significantly improves children's health and access to health services as compared to their non-Head Start peers. The current study, however, will concentrate on whether the impact of Head Start on healthy behaviors is maintained even after children are no longer in the program. More specifically, the three areas of health that will be addressed are childhood obesity, immunizations, and dental health. Within the context of these three health issues, comparisons will be made to assess the impact Head Start has on healthy behaviors. The comparison group will be children who were on the waiting list for Head Start within the same period. Because all children must meet the same eligibility requirements, the key difference between the two groups is their attendance of a Head Start program.

In addition to assessing whether Head Start children demonstrate more positive health than their wait-listed peers, this study will also assess whether Head Start children are more likely to engage in preventive health measures. The health component of Head Start promotes healthy eating and regular dental care, and requires a higher standard of immunizations than what is required from other early childhood centers. Through educational components for both children and parents, Head Start promotes healthy

lifestyles and informs children and parents of the vital role health plays in growth and overall development. So, whether such efforts have a lasting effect, not only children's health, but also on their health behaviors, is brought into question.

Based on the existing evidence that Head Start is a positive experience for children's health during their enrollment, expected findings are that children enrolled in Head Start will show higher rates of preventive care and healthier lifestyles (maintained immunization rates, regular dental checkups, and healthier meals) than their non-Head Start counterparts in reference to the three specific domains discussed: childhood obesity, immunizations, and dental health. The ecological model emphasizes the importance of multiple variables and the interaction and influences that occur between these levels of variables. Head Start works to influence children's environtments by focusing on many of the variables known to affect health, including interpersonal, intrapersonal, institutional, and community factors. Head Start educates children on the importance of a healthy lifestyle, informs the parents of the vital role health plays in their children's lives, informs them of how to foster healthy lifestyles for their children, and incorporates community partners to provide health services for children when no other options are available for them. It is expected, then, that Head Start's influence, at all of these levels, creates a positive impact on children, allowing for changes to be sustained throughout the child's life. In comparing Head Start and non-Head Start children, it is expected Head Start children will demonstrate more proactive health behaviors than their non-Head Start peers who did not receive the same services. In addition, it is expected that results will indicate Head Start's influences on children's

health were sustained two to four years after the Head Start group's participation in the program.

As Head Start programs across America continue to be scrutinized for program effectiveness, it is imperative that *all* areas are assessed to determine their true impact on the children they serve. As research continuously illustrates the positive impact early intervention services have on increasing the resiliency of children deemed to be "at-risk," Head Start then logically seems the ideal environment to provide such services to low-income, disadvantaged children. Determining the impact of Head Start's efforts to make positive changes in children's environments within the health domain will provide further information on how to make the program more effective. There is no question that Head Start is a positive experience for our nation's children. However, by measuring the degree to which those positive changes are sustained, Head Start will be at an advantage of knowing how to further impact the families it serves.

Additional research on the long-term impact of the Head Start health component can also provide further insight into the vital role Head Start plays in the lives of our nation's low-income children. As illustrated previously, children raised in low-income families are faced with a multitude of factors that can negatively impact their overall development and success. Understanding the true impact of such early intervention services as Head Start, not only in the area of cognitive development as is routinely studied, but in all domains of development, will further establish the need for comprehensive early childhood programs.

CHAPTER II

LITERATURE REVIEW

As previously discussed in the Introduction, evaluative studies of the Head Start program have traditionally focused on cognitive gains resulting from participation in the program. Despite the many areas that Head Start addresses, the health component of Head Start has historically been neglected in efforts to determine the impact of Head Start on its enrollees. Accounts of Head Start's origination indicate that the health component was identified as one of the planning committee's priorities due to the understanding that children must be healthy in order to learn. The following is a review of studies conducted to determine the impact of Head Start's efforts on the health needs of Head Start children.

Head Start's Health Services

Abt Associates was commissioned in 1977 by the Administration on Children, Youth and Families to conduct an evaluation of the Head Start health component, resulting in Fosburg's *The Effects of Head Start Health Services* (1984). Fosburg examined Head Start's health services in reference to medical, dental, and nutritional domains through the use of a longitudinal design from 1979 to 1983. The study consisted of random assignments of children to a Head Start or non-Head Start group (experimental and control), physical examinations of the children, staff and parent interviews, and record reviews across four Head Start sites. The four questions addressed by the study included:

1. What is the health status of children before they enter Head Start?

2. What medical, dental, and nutritional health services do they receive from Head Start?
3. How do medical, dental, and nutritional services received by Head Start children compare with those received by children in the non-Head Start group?
4. What are the effects of Head Start health services on the health status of Head Start children?

Despite operational difficulties (differential attrition in experimental and comparison groups, and diffusion effects resulting in control group participants receiving health services they normally might not have received), the evaluation indicated Head Start children fared better medically than the non-Head Start comparison group. Children who had been enrolled in Head Start were more likely to receive medical examinations; more likely to receive medical treatment for pediatric health concerns; more likely to receive dental examinations and dental services, and visit the dentist more regularly. The Head Start children consumed more calories and protein (if attending regularly), and their parents served meals of higher nutrient quality, than did the parents of their non-Head Start peers. While this study demonstrates positive effects sustained after children graduated from their Head Start program, it does not compare children pre- and post-Head Start enrollment. A comparison of the Head Start group prior to enrollment in the program and after they exited the program would provide valuable information and a more accurate reflection of the health component's longer-term impact. More importantly, however, is that significant changes were made to the Head Start health component following the revision of its Performance Standards in 1998. Moreover,

Fosburg's study was conducted in 1984, prior to more stringent Health Performance Standards. While this study documents the immediate impact of Head Start's health component, it does not illustrate the program's impact on families *after* program participation.

The Head Start Synthesis Project (McKey & Smith, 1990) reviewed over 1600 published and unpublished Head Start documents and over 200 research reports on the effectiveness of local Head Start programs. Meta analyses were conducted, whenever possible, to estimate Head Start's effects on children's cognitive and socioemotional development, and on their health. Of the hundreds of studies and reports reviewed, only 34 in the area of health services met criteria for inclusion, once again highlighting the need for further analysis in this area. McKey and Smith (1990) noted the majority of the documents reviewed for the Synthesis Project focused on children's cognitive performance. Overall, the Synthesis Project confirms that Head Start participation results in "meaningful" improvement in children's general physical health and that a range of health services are provided to children who need them, following their health assessment. McKey and Smith (1990) also concluded that the health of Head Start children was comparable to that of their more advantaged peers. However, results indicated that there does not appear to be a significant difference in the health behavior practices of Head Start parents as opposed to non-Head Start parents, raising questions about the impact of the health education component and whether parents are being empowered to make positive environmental changes. The Head Start Synthesis Project received much critique by Gamble and Zigler (1989) and Schweinhart and Weikart

(1986), who noted that the studies included in the Synthesis Project were of variable quality and the studies included in the report were not of a representative sample of all Head Start sites. Gamble and Zigler report in their critique that McKey and Smith acknowledge and confirm inclusion of research studies of both low and high quality. "If a large portion of the research base is of serious questionable quality," Gamble and Sigler state, "then the inferences generated by collating that research into a meta-analytic synthesis lose their powers to compel belief…as a whole, the research base used to generate the meta-analysis have been so variable as to preclude drawing valid inductive inferences" (p. 270). Furthermore, Gamble and Zigler (1989) noted that of the studies included in the Synthesis Project, few incorporated comparisons or control groups, consequently resulting in contrasts between pre- and posttest or observation, or description of performance against a criterion such as the Performance Standards.

Research conducted by Hale, Seitz, and Zigler (1990) is unique in that it includes forty Head Start children, eighteen low-income children on a Head Start waiting list, and twenty children in a middle-class Control Group in a comparison of medical records. The major purpose of this study was to, "examine the health activities of a Head Start center in order to ascertain whether the delivery of the health-related services for children is in fact enhanced" and "whether the degree of parental involvement influences the child's receipt of health services" (p. 449). The 78 children were compared on health screenings and dental examinations, and their medical records were examined beginning from birth. Results indicated that, in contrast to children on the waiting list, Head Start children were significantly more likely to be screened for lead, hematocrit, tuberculin,

blood pressure, hearing, and vision. Results also indicated that 56 percent of Head Start children were more likely to receive dental examinations and more likely to receive age-appropriate health screenings. Of greater interest, however, are the results of the comparison between Head Start children and the middle-class Control Group. Based on Hale et al.'s findings, Head Start children were 20 percent more likely to receive dental examinations and more likely to receive tuberculin, blood pressure, hearing, and vision screenings. They fared better than not only their wait-listed peers, but better than their middle-class peers, as well. Hale et al.'s findings "clearly demonstrate that Head Start is effective in providing preventive health services for economically disadvantaged children" (p. 455); however, it offers no information on whether such influences are sustained after children exit the program. Health screenings are important for early identification, and early identification of treatable conditions is vital to a child's future health. Nevertheless, it is just as important for the family to be able to engage in preventive health efforts following their child's graduation from the Head Start program, an area not investigated in the Hale, et al. study.

The Administration for Children and Families (ACF), the Assistant Secretary for Planning and Evaluation (ASPE), and the Assistant Secretary for Management and Budget (ASMB) requested that the Office of Inspector General (OIG) conduct an investigation due to concerns that the rapid expansion of Head Start could lead to a negative impact on the quality of services provided. *Evaluating Head Start Expansion through Performance Indicators* (Department of Health and Human Services, 1993) was based on various sources of information. Eighty Head Start grantees were included,

from which program personnel were interviewed in person or via telephone using a structured discussion guide. OIG staff reviewed Head Start records for 3,100 children, and 18 specific performance indicators were identified as a focus for this investigation. Six of the identified performance indicators were related to health services:

1. Percent of children medically screened
2. Percent of children receiving the needed medical treatment
3. Percent of children receiving dental exams
4. Percent of children receiving the needed dental treatment
5. Percent of children fully immunized
6. Program provides nutritious meals and snacks

The OIG (1993) concluded that there were no statistically significant differences related to the performance indicators before and after the expansion. The OIG did, however, discover noteworthy inconsistencies between their findings/observations and Program Information Report (PIR) data. The PIR is a report all Head Start programs are required to submit annually to assess compliance with the Program Performance Standards. The OIG (1993) concluded that, "because of (1) inadequate grantee record keeping, (2) the lack of specificity in the Head Start performance standards, and (3) the fact that many grantees disregard ACF policy guidance, we were unable to determine if the program and performance data weaknesses that we found reflect serious deficiencies in the quality of services provided by Head Start" (p. 7). Overall, PIRs tended to reflect greater compliance than was detected by OIG investigators. Keane et al. (1996) summarized some of the identified discrepancies:

- Ninety-two percent of the children received some medical screening versus ninety-seven percent reported on the PIRs;
- Seventy-six percent of the children had their medical needs completely met versus the ninety-seven percent reported on the PIRs;
- Eighty-five percent of the children received a dental screening versus ninety-five percent as reported on the PIRs;
- Sixty-seven percent of the children had their dental needs completely met versus ninety-five percent reported on the PIRs.

The documented discrepancies suggest problems with record keeping efforts with obtaining health screenings/treatment and follow-ups for Head Start children. The identified discrepancies should be interpreted with caution, as a number of factors are implicated in these differences. The eighty Head Start programs included in this study were from various states, which have varying state- and age-specific immunization requirements. Furthermore, tools for needs assessments are not consistent across all programs. The Head Start Model Family Needs Assessment packet is suggested, but not required; and many Head Start centers are known to use versions that are less thorough or that have been created to meet their own needs. It should be noted that these discrepancies do not negate Head Start's positive influences, but rather identify a need for more accurate record keeping in order to clearly understand the impact of the health component. What the study did not evaluate, however, is the long-term impact of the program. Instead, the study focused on one single treatment year, the year in which the

children were enrolled in Head Start, to determine if significant changes were observed following Head Start expansion.

In 1993, Brush, Gaidurgis, and Best set out to evaluate the quality of Head Start's comprehensive services using PIR date and on-site program reviews conducted by Head Start. Based on both sources of information, the data confirmed that most grantees deliver extensive services and meet nearly all of the Program Performance Standards within the Head Start health component. Brush et al.'s (1993) findings were that across all programs that completed the PIR in 1992, medical treatment was provided to 97 percent of the children needing health services. Once again, this speaks to Head Start's massive efforts to ensure children's health needs are both identified and treated, but it offers little in the way of understanding the influence Head Start may have on changes families may make in the home environment, such as healthier meal choices or increased preventive efforts. Keane et al. (1996) described Brush et al's (1993) examination of the quality in Head Start's comprehensive services. Per Keane et al., Brush's study used three resident Head Start databases (PIR, OSPRI, and HSCOST) and found that "most Head Start grantees deliver extensive services and meet nearly all the Performance Standards for each component" (p. E-26). Brush, et al. concluded that the quality of services provided by Head Start depended on factors such as total enrollment and the program's Health Coordinator's level of education. Grantees with larger enrollments demonstrated greater difficulty securing dental services for their children, while enrollment between 400 and 1,000 students was related to "best" performance, as defined by the study. The health coordinator's level of education was associated with

program performance – the more highly educated the coordinator was, the more optimal program performance was in meeting health standards.

Zigler et al. (1994) purported to, "make more widely known the important role Head Start has played in improving the health of our nation's economically disadvantaged young children, to dispel some misconceptions about the role of health in Head Start, and to provide a data-based portrayal of the health services Head Start provides" (p. 512). Zigler et al. evaluated whether the health component of Head Start meets Program Performance Standards by analyzing 1991 to 1992 PIR data and completing Self-Assessment Validation Instruments (SAVI), more recently known as the Head Start On-Site Program Review Instrument (OSPRI). Zigler et al. concluded that: ninety-one percent of Head Start children received complete nutritional screenings; ninety-eight percent were medically screened; and ninety-five percent received dental exams. Of those enrolled in the program from 1991 to 1992, almost ninety percent were fully immunized. Overall, Zigler et al.'s 1994 investigation affirmed that Head Start children have better access to health care, specifically preventive care, than their non-Head Start peers. Zigler et al. also concluded that Head Start both assesses and meets the health needs of their participants to a greater extent than other state-funded preschool programs. The vast majority of Head Start programs were found to be in compliance with Program Performance Standards that address health services. Those that were out of compliance did not necessarily fail to provide the outlined services, but rather they did not provide *all* children the *requisite* level of care outlined by the Performance Standards. Zigler et al. concluded that the provision of dental, medical, and nutrition

services were particularly strong components of Head Start programs. Furthermore, Zigler et al. highlighted the "brokering" function of Head Start, which allows programs to assist families by linking them to community health services and encourages the establishment of a medical home for ongoing health and preventive care. Head Start also plays a role in educating parents about the importance of health promotion and prevention.

Using data from the National Longitudinal Survey of Youth (NLSY) and the National Longitudinal Survey's Child-Mother file (NLSCM), Currie and Thomas (1995) contrasted the effects of Head Start between children who attended the program and their siblings who had not, as well as between those enrolled in Head Start versus other preschool programs. Results revealed evidence of Head Start having a positive effect on nutritional and health status. Evidence of positive influences was also found in children enrolled in other preschool programs, suggesting the difference lies in preschool attendance and not particularly in Head Start participation. However, health impact was assessed using only immunization status and growth (height) measures, with the assumption that access to immunization suggests a likelihood of attaining other health services. Nutritional status was examined utilizing a height-for-age measure. No information was reported on the maintenance of positive influences on health behavior, such as scheduling routine dental check-ups and identifying a primary care physician. Based on the minimal health measures obtained, inferences of overall health status are limited. Furthermore, this study is based on the assumption that access to immunizations

indicates a likelihood of attaining additional health services; therefore, the results should be interpreted with caution, considering the magnitude of this assumption.

The Descriptive Study of Head Start Health Services (Keane et al., 1996) resulted from Head Start's acknowledgement that more information was needed on how local programs provide services for their families and on the health status of the children in these programs (O'Brien et al., 2004). Unique from previous Head Start health evaluations, this descriptive study gathered information from individual interviews with Head Start parents and Head Start staff, rather than from compilations of health records and PIR data. A total of 1,189 families with four-year-old children across forty centers in 23 states and Puerto Rico were included in the sample. Week-long site visits were conducted in the spring of 1994 at each of the forty selected programs in which researchers conducted interviews with the Head Start staff responsible for the implementation of the programs' health services. Interviews were also conducted with parents inquiring about their child's health and use of health services. Researchers additionally reviewed the Head Start health records for these children and observed meal times at each of the centers. Results of the Descriptive Study indicated that several heath conditions were detected for children during their initial health screenings or examinations following enrollment in the program, including blood disorders, speech and language deficits, dental or oral health conditions, and hernias. The health study also confirmed the high prevalence of dental caries in Head Start children with 96.4 percent of Head Start children having received dental examinations and 42 percent having an identified dental condition (more than 80 percent of these dental conditions

were dental caries). Keane et al. (1996) found that only 43.5 percent of children in the research sample were immunized at the levels required by the Head Start performance standards, but 82 percent were fully immunized in accordance with the PIR reporting requirements, reflecting Head Start's stringent immunization requirements. Keane et al. also reported that the most successful aspect of the nutrition domain is the provision of healthful meals for its participants, and proper nutrition and nutrition education were observed during formal meal-time observations by researchers. The Descriptive Study concluded that Head Start programs engage in three levels of activities to serve their low-income participants: ensuring children receive health screenings and have any identified health needs met; ensuring children receive necessary preventive care and that a medical home is established; and helping both the child and his or her family take responsibility for their own health care by empowering them to continue to engage in preventive care and other needed health services.

A more recent report of Head Start data developed by the Center for Law and Social Policy (CLASP) (Irish, Schumacher, Lombardi, & Center for Law and Social Policy, 2004) revealed more promising results. *Head Start Comprehensive Services: A Key Support for Early Learning for Poor Children* (2004) was the fourth brief of a series of analyses of PIR data. For this brief, data from PIR reports was evaluated in terms of the health services offered by Head Start. When possible, PIR data was compared to available national data on the services that low-income families receive, such as information from the General Accounting Office and the U.S. Department of Health and Human Services. The CLASP Policy Brief concluded that Head Start children appeared

to be more likely than low-income children in Medicaid-managed care to receive medical screenings. "In 2002, 86 percent of Head Start children were screened for health and development, whereas a 1997 study found only 28 percent of children enrolled in Medicaid managed-care were up-to-date in required screenings, and an estimated 60 percent received *no* screenings" (p. 1). Moreover, 93 percent of Head Start children received all immunizations possible, as compared to only 72 percent of 19 to 35-month old children living below the federal poverty line and 79 percent of higher-income children who follow only the recommended schedule. Children enrolled in Head Start were also more likely to receive dental exams and dental preventive treatment. While just over 20 percent of two- to five year olds below the federal poverty line visited the dentist the previous year, 78 percent of Head Start children received dental exams. Again, while such results speak to the impact of Head Start on children's health, the data analysis was restricted to information obtained about children while they were attending a Head Start program.

Following the 1998 reauthorization of Head Start, Congress mandated a national impact study of Head Start to address two main points:

1. Determine the impact of Head Start on children's school readiness and parent practices that support children's development;
2. Determine under what circumstances Head Start achieves its greatest impact and for which children (Department of Health and Human Services, *Head Start Impact Study: First Year Findings*, May 2005).

Using a longitudinal design, approximately 5,000 three- and four-year-old children applying for Head Start were randomly assigned to a HS Group (enrolled in Head Start) and a Control Group (attended another available community non-Head Start program). Data collected was initiated in the fall of 2002 and set to continue through the spring of participants' first-grade year (2002 to 2006). Data collection, comparable for both groups, included parent interviews, direct child assessments, teacher surveys, observations of the care settings, ratings of children by care providers, and interviews with center directions and other care providers. Preliminary data suggest that, overall, Head Start produces positive impacts on parental reports of a child's health status and access to dental care. Some evidence suggests that greater impacts are experienced by the three-year-old children than the four-year-old children, possibly because of their longer participation in the program (one year versus two years).

The ten studies previously discussed shed light on the significance of Head Start's health component on helping families assess and meet the health needs of their children. As six of the previous nine studies/reports use the PIR as a source of information, caution should be used when interpreting results as the PIR is a self-report measure submitted by each individual grantee and then subjected to the bias inherent to such measures. As Keane et al. (1996) noted, there is minimal verification of the PIR data by the Head Start Bureau. On-site monitoring visits are conducted only once every three years, resulting in minimal assurance that the PIR is completed accurately by respondents. As with all self-report measures, there is a possibility that grantees inflate or deflate response to reflect compliance with the Program Performance standards. The

self-report measures, then, offer valuable information for descriptive purposes, but should be used cautiously in evaluative terms.

Two of the conclusions of the Head Start Synthesis Project (McKey & Smith, 1990) contribute to the idea of the present study: that it is unclear if home diets of Head Start children are better than those of their non-Head Start peers, and that there were no significant differences in the health behavior *practices* of Head Start parents as compared to non-Head Start parents. One thing the majority of the studies agree on is that Head Start children receive services vital to their health and development while they are enrolled in the program. However, Head Start does not continue to provide these services following graduation. These children return to their original home environments, often in impoverished neighborhoods or high-risk surroundings. This clearly depicts the importance for not only providing for the health needs of these children, but also for helping families make the necessary changes in their homes to maintain the health status of their children. While it is important that Head Start children's health needs are met while they are enrolled in the program, it is even more important that these health needs are followed-up on throughout their lives and that parents continue encouraging the healthy behaviors taught by Head Start staff: the importance of preventive care and treatment. As Hale et al. (1990) noted, "To optimize development, the growing child requires environmental nutrients, including health services, at *each stage of development*" (p 455). The reality is Head Start offers but one, maybe two, years of intervention in the lifetime of a child. While the interventions provided during those years are important, it is of greater importance to empower

families to continue to make positive choices in the lives of their children in order to ensure ongoing healthy development and increased opportunities to succeed and demonstrate “social competence.”

There is ample evidence that Head Start positively impacts children’s access to health services and helps meet their health needs. With the increasing health concerns affecting children, programs that positively impact children’s health status are fundamental, especially for low-income families. Poverty increases the likelihood a child will be overweight or obese; increases the probability a child will not have their immunizations up-to-date; increases the likelihood that they will have their dental health needs go unmet; and increases the probably that they will have much less access to preventive health services. Collectively, these four health concerns, in addition to decreased access to preventive care, can lead to greater risks for additional physical, social, emotional, and academic difficulties. As previously discussed, childhood obesity, immunizations, and dental health are significant health challenges that can impact a child’s overall development. However, all three health concerns are either preventable (childhood obesity and poor dental health), or attainable through many means for all children (immunizations). Head Start has proven to be effective in providing these children the necessary services for optimal health while they attend a Head Start program, but Head Start cannot inoculate these children against the disproportionate obstacles presented by their poverty-stricken environments. One or two years of health screenings and follow-up care will unfortunately not eradicate all the risk factors associated with poverty. But the educational aspect of the health component can

empower families to continue with proactive, healthy behaviors that can have long-lasting benefits. By helping children and families learn the importance of healthy eating, the significance of immunizations, and the need for preventive dental health, Head Start can continue to make positive changes long after children leave the program.

Hypotheses

Given the existing evidence, there is no doubt that Head Start has a significant impact on children's health while they are enrolled in Head Start. The present study, however, is more concerned with examining the potential long-term impacts of Head Start's health component on proactive healthy behaviors, specifically related to childhood obesity, immunizations, and dental health. The following questions will be addressed by the present study:

Childhood Obesity:

1. Do children with Head Start experience have healthier Body Mass Indexes than children with no Head Start experience?
2. Do children with Head Start experience have healthier Body Mass Indexes following their Head Start experience (Time 2) as compared to when they first enrolled in the program (Time 1)?

Immunizations:

3. Are children with Head Start experience more likely to have up-to-date immunizations than children with no Head Start experience?

4. Are children with Head Start experience more likely to have up-to-date immunizations following their Head Start experience (Time 2) as compared to when they first enrolled in the program (Time 1)?

Dental Health:

5. Are children with Head Start experience more likely to have more regular dental health checkups than children with no Head Start experience?

Given the widely documented effectiveness of Head Start meeting the health needs of children, it is expected that Head Start children's positive gains from the health component of the program continue after they exit Head Start. Therefore, it is expected that 1) children with Head Start experience will demonstrate improved health and increased use of preventive health measures at the time of the follow-up interview (Time 2) as compared to results from their initial health screening at the time of their enrollment in Head Start (Time 1). It is also expected that children with Head Start experience will demonstrate greater use of proactive health measures, such as regular dental visits, than children with no Head Start experience, at the time of follow-up.

CHAPTER III

RESEARCH DESIGN AND METHODS

Brazos Valley Community Action Agency's Head Start

Participants for this research study were recruited from the Brazos Valley Community Action Agency's (BVCAA) Head Start Program. The BVCAA Head Start Program serves children residing in all of the Brazos Valley, an area comprised of Brazos, Burleson, Grimes, Leon, Madison, Robertson, and Washington counties in Texas. Between 2004 and 2006, BVCAA's Head Start program served approximately 1,134 children, and over 200 children remained on the waiting list during this time. Within this time period, approximately 49 percent of the children enrolled in Head Start were three years of age, and 51 percent were four years of age. Of the overall enrollment for these two years, 41 percent of the children represented Hispanic/Latino backgrounds, and 25 percent declared Spanish as their primary language. As Head Start eligibility criteria state, children must be at or below 100 percent of the Federal Poverty Level to be enrolled in Head Start, currently at $21,200 for a family of four (Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, *The 2008 HHS Poverty Guidelines*). It is not uncommon, however, for children enrolled in Head Start to be considerably *below* 100 percent of the Federal Poverty Level. Mary Kay Smith, Program Director for BVCAA's Head Start states the lower end of their program participants is typically the public assistance recipient, with some families reporting annual incomes of $4,800, or per capita income of approximately $1,500 (personal communication, 2008).

The BVCAA Head Start PIR for 2004 to 2005 indicates that at the end of the 2004 to 2005 enrollment year, 549 children had insurance coverage, while 585 reported health insurance coverage at the time of enrollment, a six percent decrease. However, while only 335 children had an established medical home at the time of enrollment, 631 had an established medical home upon graduation from Head Start. A total of 635 children (all those enrolled) also had an established source of ongoing, continuous dental care by the end of their enrollment, an increase from the 580 children who identified an ongoing source of dental care at the time of enrollment. Additionally, 630 children were up-to-date on age-appropriate immunizations, an increase from the 500 children who were up-to-date on their immunization status at the time they enrolled. Of the 580 children who received a professional dental examination during the time they were enrolled in Head Start, 534 of them received preventive dental care, 128 were identified as needing further dental treatment, and 120 received the necessary dental care.

The 2005 to 2006 PIR indicates that 510 children had health insurance coverage at the time they left Head Start, a contrast from the 482 children who were noted to have insurance coverage at the time of enrollment. There was also an increase in the number of children who had an established medical home at the time of graduation (386) as compared to the number of children who had established medical homes at the time they were enrolled (249). At the end of their enrollment year, 564 children also had an identified source for continuous dental care, an increase from the 482 who reported an established source of dental care at the time of enrollment. A total of 586 children received a professional dental examination during their enrollment at Head Start. Of

these children, 327 received preventive dental care, 136 were diagnosed as needing further treatment, and all 136 children received the treatment necessary. At the time of enrollment, the immunization status of 414 children was up-to-date, while 472 were up-to-date at the end of their enrollment year.

Participants

The Head Start (HS) Group was comprised of children selected to participate in the research study if they a) attended a Head Start center-based program between 2004 and 2006 for at least one complete year, or 2) if they were on the waiting list to attend a Head Start program within the same time frame. The waiting list was used as a control group to draw comparisons between children who attended Head Start and children who did not. Using the waiting list as a control group allows for comparisons between two groups that meet the same eligibility requirements, but the HS Group attended Head Start while the Waiting List Control (WLC) Group did not. However, systematic differences between the two groups should be noted. Head Start enrolls children on a "first come, first served" basis. Therefore, some families are at a greater advantage if they have prior knowledge of the program or are more proactive in seeking such programs for their children.

A total of 381 participants were identified as having been enrolled in a center-based program and attended for at least one *complete* school year during 2004 to 2005 and 2005 to 2006, and a total of 257 children were on the waiting list, for a possible 639 participants in the study. Of these, 72 percent (455) were eliminated due to contact

information that was no longer valid (disconnected phone numbers and incorrect home addresses).

The total number of children in the HS Group was 11. However, due to inconsistent information for one participant (mother reported Head Start enrollment, but no information was available for that child in PROMIS), the case was excluded from the study. The total study sample included 42.3% (N=10) children who had been enrolled in Head Start and 57.7% (N=15) who were on the waiting list for Head Start, for a total study sample of 25 children. The HS Group included 20.0% (n=2) males and 80.0% (n=8) females. Of these children, 20.0% (n=2) were African American and 80.0% (n=8) were Hispanic. The WLC Group was comprised of 13.3% (n=2) males and 86.7% (n=13) females. Of the children in the wait-list group, 100% were Hispanic (n=15).

Measures

Existing Head Start Data – PROMIS Database

As required by Program Performance standards, Head Start programs are required to complete a health assessment upon initial enrollment of the child, which assesses the child's health status and helps identify existing health needs that merit treatment. Some of the items included on the health assessment of BVCAA's Head Start program include information about the status of the child's immunizations, the child's eating habits and parent's concerns about the child's eating habits, standard height and weight measurements, medical home information, and additional information relevant to the child's health and development. All information obtained during the initial health assessment and throughout the year is collected in PROMIS, an online, secure database

used to centralize information about Head Start families. PROMIS is used for record-keeping purposes and tracks information about Head Start families, such as their enrollment information, demographics, and needs assessment. PROMIS was used to obtain information for Group 1 at the time of their enrollment in Head Start, which was then compared to the information obtained at the time of the follow-up interview. The information gathered from PROMIS includes: height and weight measurements, from which BMIs were calculated; status of the child's immunizations; and information about their eating habits.

Follow-Up Parent Interviews

Parent interviews were conducted to assess the impact of the health component of Head Start on children's health, specifically in the areas of childhood obesity, immunizations, and dental health. Parent interviews were derived from the initial health assessment conducted by Head Start staff upon initial enrollment into the program, per Head Start performance standards. This information is used by Head Start staff to assess a child's health status and determine possible health needs that require further attention. The follow-up parent interview for this study was developed by selecting questions from the initial health assessment that are relevant to the three health concerns targeted in this study: childhood obesity, immunizations, and dental health. The questions selected were then repeated in their original form during the follow-up interview. Further information, in addition to the standard information that Head Start collects, was obtained during the parent interviews as a source of supplemental and qualitative information regarding parents' perspectives of their child's health. Specifically, parents were asked questions

about proactive health behaviors, such as how often their child is taken for dental care checkups and whether these checkups are scheduled proactively to avoid future concerns or reactively to address already existing dental conditions.

Child Health Questionnaire

An additional measure was used to obtain an overall measure of child health status. The Child Health Questionnaire (CHQ) is a parent questionnaire designed to assess health-related quality of life in children ages five to eighteen. It was constructed to assess the physical and psychosocial well-being of children. The CHQ was normed on a nationally representative United States sample. Developed by Jeanne M. Landgraf and John E. Ware, Jr., the CHQ measures 14 unique physical and social concepts. Scores can be combined to derive overall physical and psychosocial scores, the CHQ Summary Scores. The Parent Form, comprised of 28 items, obtains information on the health-related quality of life in children from the perspective guardian. The CHQ was utilized to obtain a standardized assessment of participant's health that allows for a comparison between Group 1 (Head Start participants) and Group 2 (wait-listed participants) on overall health status. (Landgraf, Abetz, & Ware, 1999).

Methods

Potential participants for this study were identified through the PROMIS database. Participants were chosen if they were enrolled in a center-based classroom or on the waiting list for Head Start between 2004 and 2006. In order to be included in the study, children had to have been enrolled in the program for a minimum of one complete year.

Once participants were identified as having been enrolled in a center-based Head Start Program between 2004 and 2006, or having been on the waiting list within that same period, families with residential addresses listed in PROMIS were sent a letter with information about the research study of Head Start's health component. The information sheet provided a description of the research study, its purpose and significance, and the benefits and risks for the participant. Contact information of the primary investigator was provided, and parents were instructed to contact the primary investigator if they had questions regarding the study or were interested in participating. All letters sent home were in the primary language of the family (English or Spanish), as indicated in their record in PROMIS. Following the mail out, 176 letters were returned due to incorrect addresses or families no longer residing at that residence.

Two weeks following the mailing, follow-up phone calls were conducted for all families – those that were sent a letter and those that had no address listed in PROMIS. During these phone calls, the primary investigator reintroduced the research study to parents, explaining the purpose of the investigation and the benefits and risks for the participant. The follow-up phone calls were conducted in either English or Spanish, as indicated by the home-language designation in PROMIS or by parent's responses during the phone call. The majority of follow-up phone calls conducted resulted in disconnected or wrong phone numbers. The majority of families that agreed to participate agreed to do so after the first phone call. Some family members requested that the primary investigator call them back to give them time to decide or to check with their spouse before agreeing to participate; however, at the time of the second phone call, all of these

families declined participation for various reasons (i.e., spouse did not agree, work schedule did not permit, they were no longer interested, or the children were not available due to being with other caregivers or out of town). Parents who agreed to participate were told they would be contacted within two weeks once an interview schedule was in place.

Initially, a central location within the city was used to conduct the interviews. Interviews in Brenham were scheduled to take place at the Trinity Wellness Center, which is operated through the Trinity Medical Center and provides health fairs, educational programs, and screenings to area citizens (www.trinitymed.org). Interviews in Bryan were conducted at BVCAA's Community Health Center. BVCAA's Community Health Center is a federally qualified community health center that "strives to eliminate health disparities by offering quality primary and preventive health care to the medically underserved of the Brazos Valley" (www.bvcaa.org). This location was chosen not only for its central location in Bryan, Texas (where the majority of the BVCAA Head Start families reside), but also because it is commonly known to Head Start families.

From the five scheduled interviews at Trinity Wellness Center in Brenham, only one family attended following a reminder call 10 minutes after the scheduled time. Per follow-up calls, the remaining families indicated various reasons for not attending the interview: illness, transportation difficulties, and forgetting about the interview.

Because the vast majority of BVCAA's Head Start families reside in Bryan, more interview dates were scheduled at the BVCAA Community Health Center in

Bryan. The primary investigator arranged for evening and weekend access to the Community Classrooms at the Community Health Center for four days: Thursday and Friday, 5:30 p.m. to 8:00 p.m., Saturday from 9:00 a.m. to 3:00 p.m., and Sunday from 1:00 p.m. to 5:00 p.m. A total of 21 interviews were scheduled and 9 were completed. Per follow-up phone calls, families cited transportation difficulties, forgetting about the scheduled interview, and schedule conflicts as reasons for not attending the interview.

Because of the minimal number of interviews that were being completed by scheduling them at a community location, follow-up interviews were then conducted in the home to encourage participation. Few families indicated concern with this option; rather, most indicated this as a preference and agreed it made participation in the study easier. However, the sample size for the research study remained small following in-home interviews. Several parents contacted the interviewer the day the interviews were scheduled and cancelled due to work-schedule changes or conflicting appointments. Other parents cancelled with the interviewer at the time of the follow-up call, citing having forgotten about the appointment, having new engagements to tend to, or not having enough time to follow-through with the interview.

The investigator proceeded to make unscheduled visits to the homes of families 1) that had previously agreed to participate in the research study but had been unable to complete the interview, and 2) with which no contact had been established but there was a possibility that their residence was still correct (i.e., families whose initial letters were not returned and phone numbers did not appear disconnected). From a total of 20 of

these unscheduled visits, zero follow-up interviews were conducted and two families agreed to follow-up interviews at a later date (only one of which was completed).

The follow-up interviews consisted of the following:

1. Height and weight measurements of the child (without shoes);
2. Follow-up interview based on the initial health assessment;
3. Child Health Questionnaire.

The family was first given a copy of the Information Sheet, and the interviewer provided a brief summary of the study and encouraged the caregiver to read the Information Sheet. Once the caregiver indicated understanding of the research and their expectations as a participant, the interviewer requested the caregiver sign the consent form. Following completion of the informed consent, the interviewer obtained assent from the child and obtained height and weight measurements of the child using a digital scale and measuring tape. The interview with the caregiver was initiated with a standardized introduction, in the language preference of the parent:

> The following questions are to get a general idea of your child's current health status. There are no right or wrong answers to any of these questions and we ask that you be as honest and as accurate as possible. If at any time you feel uncomfortable responding to a question, you may refuse to answer and go on to the next question. The questions will vary in topics such as general information, their general health, their eating habits, and how many times they visit the doctor. If you do not understand a question or are unsure of how to answer, you may ask for the question to be explained or repeated.

All interview questions were read verbatim from the questionnaires, but parents were allowed to ask for clarification and explanations in the event they did not understand the question or were unsure how to respond. Upon completion of all three components of the interview, families were offered a $5 gift card to a local grocery store for their participation. Interviewers then thanked the family for their participation and encouraged them to contact the primary investigator if they had any questions or concerns regarding the research study.

Responses to all interview questions were recorded by the examiner on the interview forms. No identifying information was recorded on any of the interview forms to allow for confidentiality of responses. Responses to the Follow-Up Interview and Child Heath Questionnaire were matched using pre-determined identification numbers. These identification numbers were also used to match data from the PROMIS database to data from the follow-up interview for families in the Head Start group.

By utilizing questions drawn from the initial health assessment, comparisons can be made between responses to the questions at Time 1, initial Head Start enrollment, and Time 2, at the time of the follow-up interview.

CHAPTER IV

RESULTS

This chapter is organized according to the research questions. The purpose of this study was to 1) determine if differences were noted within the HS Group at Time 1, the time of their initial enrollment in Head Start, and at Time 2, at the time of the follow-up study; and 2) determine if there were notable differences between the HS Group and WLC Group (children on the waiting list) at Time 2.

Data from existing Heard Start records, follow-up interviews, and the CHQ were compared as follows to obtain information on the three focus areas of this study, childhood obesity, immunizations, and dental health:

1. BMI scores were compared:
    a. at Time 1 and Time 2 for the HS Group, and
    b. at Time 2 between the HS Group and the WLC Group.
2. Immunization status was compared:
    a. at Time 1 and Time 2 for the HS Group;
    b. at time 2 between the HS and WLC Group.
3. Dental visits were compared between the HS Group and WLC Group at time 2.
4. CHQ results were compared between the HS Group and WLC Group at time 2.

The results are provided in order of the three focus areas (childhood obesity, immunizations, and dental health), and information on the CHQ is reported last. Table 1 provides basic descriptive information for both groups. Overall descriptive statistics can

be found in Appendix C.

Table 1.
Descriptive Statistics for Study Groups.

	Language		Mean Age		Siblings		Other Prog	
Study Group	Eng	Span	T1	T2	Yes	No	Yes	No
Head Start	3	7	3.5	7.4	5	5		
Wait List	6	9	3.53	5.47	1	14	4	11

Note. Language=Language used to conduct interview, T1=Time 1, T2=Time 2, Siblings=siblings that also attended a Head Start Program, Other Prog=child attended another program while on the waiting list.

Childhood Obesity

Height and weight measures for the HS Group were obtained at the time of the child's enrollment. These measures were retrieved from the PROMIS database for the HS Group. Additional height and weight measures were obtained at the time of the follow-up interview for both study groups. BMI scores were calculated for both Time 1 and Time 2 using the formula for Body Mass Index cited by the Centers for Disease Control and Prevention (www.cdc.gov):

$$\text{BMI} = \text{weight (lb)} / [\text{height (in)}]^2 \times 703.$$

Table 2 illustrates descriptive statistics related to the area of childhood obesity for the HS Group and WLC Group at Time 1 and Time 2.

Table 2.
Descriptive Statistics, Childhood Obesity.

	T1		T2			
	HS		HS		WLC	
	M	*SD*	*M*	*SD*	*M*	*SD*
Height	41.73	3.05	50.90	2.16	46.05	2.55
Weight	38.65	8.38	63.20	12.82	54.33	17.62
BMI	15.44	1.39	17.03	2.41	17.68	4.29

Note. T1=Time 1, T2=Time 2, HS=Head Start Group, WLC = Wait List Control Group.
HS Group, n=10, WLC Group, n=15.

Paired t-tests were conducted to compare BMIs at Times 1 and Times 2. Results indicate a significant difference between BMI scores at Time 1 (M = 15.44, SD = 1.39) and at Time 2 for the HS Group (M = 17.03, SD = 2.41), $t(9) = -2.337$, $p < .05$. Results of uncorrelated t-tests at Time 2 for the HS Group and WLC Group indicates no difference between the HS Group (M=17.03, SD = 2.41) and the WLC Group (M = 17.68, SD = 4.29), $t(24) = -0.82$, $p > .05$.

BMI scores at Time 2 were plotted on a BMI-for-age growth charts (for either girls or boys) to obtain a percentile ranking. Percentile rankings indicate the relative position of the child's BMI score in comparison to children of their same age and gender. Table 3 shows the weight status categories used with children and teens (underweight, health weight, at risk of overweight, and overweight).

Table 3.
Weight Categories for Children and Teens.

Weight Status Category	Percentile Range
Underweight	Less than the 5th percentile
Healthy Weight	5th percentile to less than the 85th percentile
At risk of overweight	85th to less than the 95th percentile
Overweight	Equal to or greater than the 95th percentile

Note. Source: www.cdc.gov.

Figure 1 provides a visual representation of the frequency children in each group fell within each category.

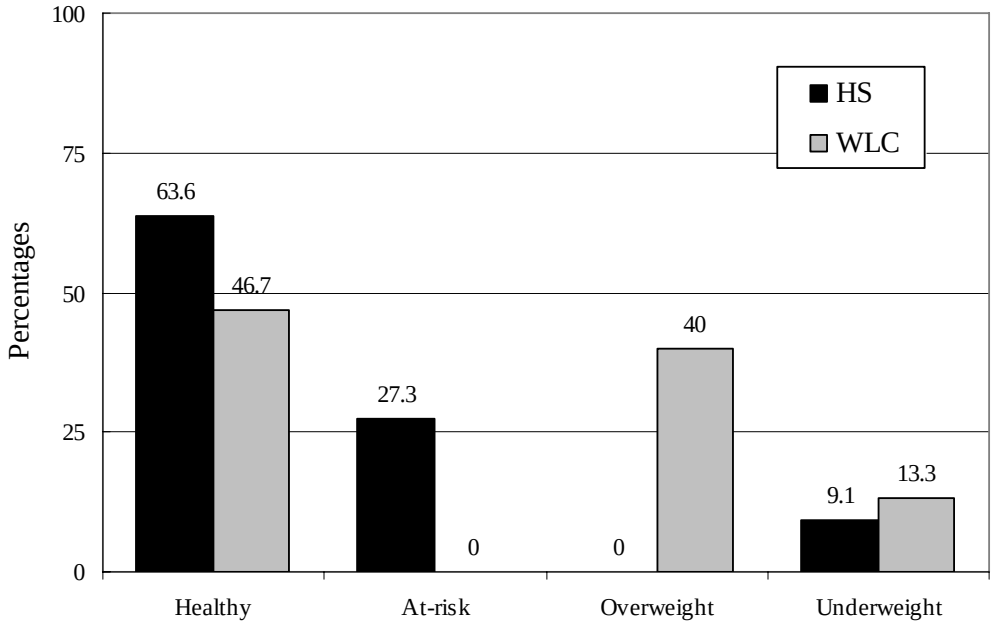

Figure 1.
Percentages in Weight Categories for Study Groups.

Based on observations of the HS Group's higher percentage in a "healthy" weight category versus an "unhealthy" weight category (at-risk, overweight, or underweight), the four weight categories were collapsed to two categories, healthy versus unhealthy, and x^2 analyses were performed for both the HS and WLC Groups. Results indicate that the HS Group was not more likely to be classified as "healthy" per the x^2 analysis, x^2 (1, N=15) =0.40, $p > .05$. The WLC Group was not more likely to be healthy, either (x^2 (1, N=10) = .07, $p > .05$).

Furthermore, an ANOVA was performed on the number of times parents reported children ate foods from specified food groups, per week. The Food Groups were defined by the Head Start preliminary health assessment as follows:

Food Group 1 = Dairy (milk, cheese, yogurt)

Food Group 2 = (rice, grits, bread, cereal, tortillas)

Food Group 3 = Fruits (oranges, grapefruit, tomatoes, fruit juice)

Food Group 4 = Oil, butter, margarine, lard

Food Group 5 = Protein (meat, poultry, fish, eggs, beans, peanut butter)

Food Group 6 = Vegetables (greens, carrots, broccoli, squash, pumpkin)

Food Group 7 = Other fruits and vegetables

Food Group 8 = Sugars (cakes, cookies, sodas, fruit drinks, candies)

The Food Groups on the follow-up questionnaire were defined as such based on the initial health assessment conducted by Head Start. In order to allow for comparisons at Time 1 and Time 2 for the HS Group, the question reamined the same on the follow-up questionnaire. However, due to missing data in the PROMIS database for the HS Group

at Time 1, comparisons could not be drawn between the HS Group at Time 1 and Time 2. Table 4 lists the results of the Analyses of Variances at Time 2 between the HS and WLC Group.

Table 4.
Analyses of Variance for Food Consumption, per Defined Food Groups.

Variable		*df*	*MS*	*F*	*p*
Food1	Between Groups	1	.54	.04	.85
	Within Groups	23	13.92		
Food2	Between Groups	1	18.10	3.87	.06
	Within Groups	23	4.68		
Food3	Between Groups	1	.17	.03	.87
	Within Groups	23	6.25		
Food4	Between Groups	1	.04	.01	.93
	Within Groups	23	6.02		
Food5	Between Groups	1	.67	.11	.75
	Within Groups	23	6.23		
Food6	Between Groups	1	.03	.01	.95
	Within Groups	23	7.18		
Food7	Between Groups	1	.19	.02	.88
	Within Groups	22	8.13		
Food8	Between Groups	1	81.40	3.22	.09
	Within Groups	23	25.25		

Note. Food1=Food Group 1, Food2=Food Group 2, Food3=Food Group 3, Food4=Food Group 4, Food5= Food Group 5, Food6=Food Group 6, Food7=Food Group 7, Food8 = Food Group 8.

Immunizations

Immunization status was measured by asking parents whether their child's immunizations were complete, based on the standard recommended scheduled. The PROMIS database indicates whether immunizations were up-to-date at the time of

enrollment or if they were provided by Head Start and complete at the time they exited the program. For the HS Group, they were considered to have "complete" immunizations if they were recorded as having them at the time of enrollment. All other children were coded as having incomplete immunizations, even if they received the necessary immunizations by the time they exited Head Start. In addition to inquiring whether the child's immunizations were up to date, parents were asked the reasons why they ensured their son or daughter's immunizations were up to date. The possible responses included:

1. Because they are required for enrollment in child care or school;
2. For prevention purposes;
3. Because it was recommended by their doctor;
4. The immunizations were provided by Head Start; or
5. Other reasons.

Chi square tests were performed to examine the relationship between the group and immunization status, to determine if the HS Group was more likely to have up-to-date immunizations at Time 2 versus Time 1. Results indicate that at Time 1 there was no difference in complete versus incomplete immunizations for the HS Group, x^2 (1, N=10) = .4, $p > .05$.

A chi square analysis was performed to determine if either the HS Group or WLC Group was more likely to have their immunizations up-to-date at the time of the Follow-Up interview. However, because 2 cells had a minimum expected count less than 5, the x^2 analysis could not be used. Fisher's exact test reveals no difference

between the groups ($p > .05$). Individual x^2 analyses indicates that both groups were more likely to report up-to-date immunizations (than incomplete immunizations) at Time 2. For the HS Group, x^2 (1, N=10) = 6.4, $p < 05$, and for the WLC Group, x^2 (1, N=15) = 11.267, $p < .05$.

Parents were asked to explain the reasons why they ensured their child's immunizations were up-to-date to gain a better understanding of their motivation. The options included: 1) because they were required for school enrollment, endorsed by 40% of the HS Group and 73.33% endorsed by the WLC Group; 2) for preventive purposes, endorsed by 40% of the HS Group and 60% of the WLC Group; 3) their doctor's recommended it, endorsed by 40% of the HS Group and 6.67% of the WLC; 4) they were provided by Head Start, endorsed by 10% of the HS Group; and other, indicated by 13.33% of the WLC Group. The two "other" responses from the WLC Group were endorsed by parents who indicated their children suffered from chronic asthma; immunizations were one of the ways in which they hoped to minimize their child's illness.

Dental Health

At the time of initial enrollment, parents were not asked the frequency with which their child visits the dentist, so comparisons on this data between Time 1 and Time 2 are not available. However, parents *were* asked if at the time of enrollment their child had dental insurance. Chi square analyses at Time 1 (x^2 (1) = 1.6, $p > .05$) and at Time 2 (x^2 (1) = .091, $p > .05$) conclude that children in the HS Group were not more likely to have dental insurance at either time of the study. The WLC Group, however,

was more likely to report having dental insurance, t(1) = 5.4, $p < .05$. Frequency of dental visits per year was compared between the HS and WLC Groups using a t-test. Results did not detect a difference, t(23) = -0.822, $p > .05$.

At the follow-up interview, parents were also asked why parents normally took their children to the dentist – for treatment (i.e., fillings) or for preventive care (i.e., cleanings). Figure 2 illustrates the frequencies with which the two groups cited as reasons for visiting the dentist. Parents provided similar results, as illustrated in Figure 3, when asked what the reason was for their child's most recent dental visit.

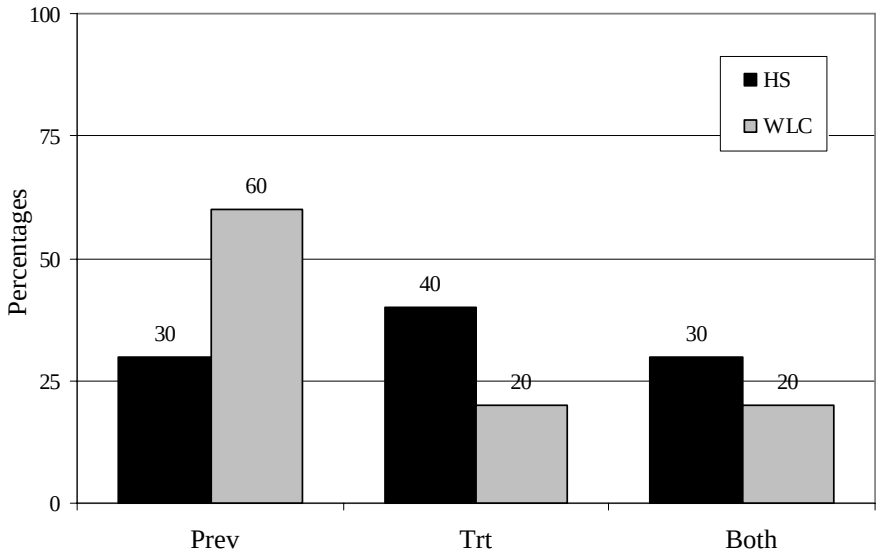

Figure 2.
Reasons for Dental Visits.

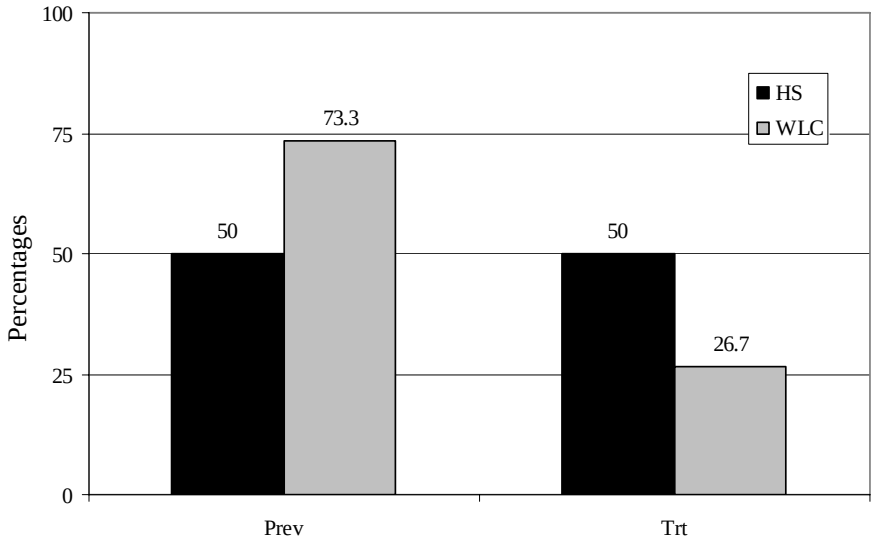

Figure 3.
Reason for Most Recent Dental Visit.

Child Health Questionnaire (CHQ)

The CHQ was used to get an overall measure of the participant's health status, but it also provides additional information on the child's overall health and well-being. The 28 questions are scored and converted to 12 Scales: Physical Functioning Scale, Role/Social Emotional/Behavioral, Role/Social Physical, Bodily Pain and Discomfort Scale, Behavior Scale, Mental Health Scale, Self Esteem Scale, General Health Perceptions, Emotional Impact on Parent Scale, Parental Impact – Time Scale, Family Activities Scale, and the Family Cohesion Scale. Standard Scores for each scale are then converted into two summary scores: the Physical Summary Score and the Psychosocial Summary Score. A One-Way ANOVA was performed to assess for differences between the two study groups on all twelve scales and the two summary scores. Results of the ANOVA are listed in Table 5.

Table 5.
Analyses of Variance for Child Health Questionnaire (CHQ).

Variable		*df*	*MS*	*F*	*p*
		CHQ Scales			
PF	Between Groups	1	572.13	2.90	.10
	Within Groups	24	197.16		
REB	Between Groups	1	501.43	1.21	.28
	Within Groups	24	413.58		
RP	Between Groups	1	2144.78	2.80	.11
	Within Groups	24	767.12		
BP	Between Groups	1	2144.78	2.80	.11
	Within Groups	24	767.12		
BE	Between Groups	1	295.02	2.34	.14
	Within Groups	24	126.22		
MH	Between Groups	1	119.72	.53	.47
	Within Groups	24	224.71		
SE	Between Groups	1	660.52	5.91	.02*
	Within Groups	24	111.81		
GH	Between Groups	1	748.27	3.08	.09
	Within Groups	24	242.71		
PE	Between Groups	1	13.15	.04	.84
	Within Groups	24	329.23		
PT	Between Groups	1	1805.82	4.53	.044*
	Within Groups	24	398.85		
FA	Between Groups	1	653.99	2.02	.17
	Within Groups	24	323.31		
FC	Between Groups	1	254.55	.40	.54
	Within Groups	24	642.64		
		CHQ Summary Scores			
PhS	Between Groups	1	115.18	2.32	.14
	Within Groups	24	49.56		
PsS	Between Groups	1	28.56	1.43	.24
	Within Groups	24	19.95		

Note. PF=Physical Functioning Scale, REB=Role/Social Emotional/Behavioral Scale, RP=Role/ Social Physical Scale, BP=Bodily Pain & Discomfort Scale, BE=Behavior Scale, MH=Mental Health Scale, SE=Self Esteem Scale, GH=General Health Perceptions Scale, PE=Emotional Impact on Parent Scale, PT=Parental Impact-Time Scale, FA=Family Activities Scale, FC= Family Cohesion Scale, PhS=Physical Summary Score, PsS=Psychosocial Summary Score.
*$p<.05$.

Additional Information

At the time of the follow-up interviews, parents were asked about their child's current insurance coverage, information that was also available for the HS Group at Time 1. Chi square results indicate that the HS Group was no more likely to be insured than uninsured at both times of the study. At Time 1, 30% of the HS Group was uninsured while 50% were uninsured at Time 2. However, results are significant for the WLC Group at Time 2, x^2 (1, N=15) = 8.067, $p < .05$, indicating they were more likely to insured than uninsured.

Another area of inquiry was whether the parent's could identify a Primary Care Physician to determine whether parents had an established medical home for their children. At Time 1, 50% of the HS Group had an established Primary Care Physician, and at Time 2, 80% identified a Primary Care Physician. Chi square analyses, however, indicates there were no differences in the likelihood of the HS Group having an established medical home at Time 1 or at the time of follow-up [x^2 (1, N=10) = 3.6, $p >$ .05]. At Time 2, however, the WLC Group was more likely to have an established medical home, x^2 (1, N=15) = 8.067, $p < .05$, as well as a source for ongoing, continuous dental care, x^2 (1, N=15) = 5.4, $p < 05$.

Secondary analyses were going to be performed to assess the extent of contributions of other factors to differences in the study groups at Time 1 and Time 2. These secondary analyses were to include ethnicity and age at the time of enrollment, school readiness measures (Developmental Indicators for the Assessment of Learning), duration of participation in a Head Start Program (i.e., one year versus two years;

considering Early Head Start participation), and Head Start center attended. However, given the size and distribution of the sample, these analyses were not performed.

CHAPTER V

SUMMARY AND DISCUSSION

The purpose of this study was to investigate whether the health component of Head Start impacts families of participants by encouraging them to engage in proactive health behaviors specifically related to childhood obesity, immunizations, and dental health. Given the documented effectiveness of Head Start's ability to meet children's health needs while they are enrolled in the program, it was expected that Head Start families would engage in more proactive behaviors with regard to their children's health, such as ensuring immunizations are up-to-date, continuing regular dental check-ups, and preparing nutritious meals. It was hypothesized that children from the HS Group would demonstrate improved results on the follow-up interview as compared to their initial responses to the health assessment at time of enrollment in Head Start. Furthermore, the Head Start group was expected to report higher rates of proactive health behaviors when compared to the WLC Group (children on the wait-list), and higher scores on the Child Health Questionnaire (CHQ) Summary Scores.

In the area of childhood obesity, the results did not support a difference between the two groups; rather it was revealed that children with Head Start experience had lower BMI scores at Time 1 than they did at Time 2. Caution should be exercised when interpreting these data, however, because BMI scores are not a direct measure of body fat, and higher BMI scores can be a result of increased muscularity rather than increased fat. BMI scores are used because of their convenience and ease of calculation, and they are a widely accepted measure of body mass to draw comparisons to the general

population. Considering the limitations to the BMI, a closer look at the frequencies that children in the HS Group fell in a "healthy category" versus an "unhealthy category" suggests the HS Group was actually "healthier" than the WLC Group at Time 2. A total of 63.6 percent of children in the HS Group had a BMI score that classified them as healthy, whereas only 36.4 percent fell in an unhealthy category (underweight, at-risk, or overweight). However, the WLC Group was more evenly spread across healthy versus unhealthy BMIs, with 46.7 percent considered "healthy," and 53.3 percent considered "unhealthy." These comparisons are merely an observation and statistical analyses did not confirm differences between the two groups. However, there is enough evidence to suggest the need for further investigation in this area. Is it possible that children from the HS Group may be more likely to be classified as "healthy" based on BMI scores? Would this provide evidence of the impact of health education in nutrition during Head Start programs? Both of these questions are important in understanding effective interventions for children of low-income families in the area of proper nutrition and healthy food choices. The limitations of the present study were unable to address these questions, but there is evidence that this is an area that merits further investigation.

Another consideration of this study was to determine whether the children in the Head Start group gained from the "health education" component of Head Start and whether their parents continued to practice the "preventive" and "healthy behaviors" they were taught while participating in Head Start. When parents were asked about the frequency at which their children ate foods from a particular food group, there were no differences between the Treatment and WLC Group. This area highlights a concern for

the health education aspect of Head Start. While in the program, children are encouraged within the classroom to partake in the preparation of meals, fostering healthy food choices and appropriate portion control. Results of this study suggest that children in the HS group are not encouraged to practice such healthy choices by the parents in the home, similar to the lack of encouragement by parents in the WLC Group.

Results for immunization status provided more promising results. Children from the HS Group were more likely to be immunized at the time of the follow-up interview than at the time of their enrollment in Head Start. However, attributing this change to Head Start is debatable, because the WLC Group was more likely to be immunized at Time 2, as well. The importance of being immunized, especially for children of the preschool and elementary age, is well-documented, and results of this study are promising in that they illustrates parents are ensuring their children are immunized according to the recommended immunization schedule. However, because there were no differences between the Treatment and WLC Group at Time 2, the likelihood of being immunized cannot be attributed to efforts of the Head Start program. Parents' responses on "why" they ensured their children were immunized indicate that parents want to ensure their children are immunized in order to be enrolled in any school environment (i.e., day care, preschool, elementary school). Parents did indicate prevention was an important motivating factor, but it appears that school enrollment may be more motivating, even if out of "necessity."

Measures of dental health revealed that children in the Treatment and WLC Group were similar. Dental insurance is one documented reason for lack of dental care

for children of low-income populations. Ironically, previous studies have documented that, although subsidized health insurance programs such as Children's Medicaid and CHIP include dental health coverage, children in this population still report less frequent dental visits (Edelstein, 2000). Once again, the results revealed by this study indicate that children from the WLC Group were more likely to have dental insurance than children who attended the Head Start program. Despite differences in dental insurance, there were no differences in the frequency of dental visits for both groups. The positive result in this section, however, is that the majority of the parents in both groups report that prevention is one of the main reasons why they take their children to the dentist. This was corroborated when parents were asked the reason for their child's most recent dental visit. Is it that parents from the Head Start group have been able to maintain their children's dental health care without health insurance, and therefore see no necessity to secure dental insurance for their children? Head Start participants not only did not reveal a likelihood of having dental insurance, but they were also equally likely to be insured or uninsured overall, while, once again, the WLC Group was more likely to report insurance coverage and an established medical home.

One area of particular interest was identified in results of the CHQ. The CHQ was used to assess overall health status, a measure on which the two groups shared no differences. However, there was a notable difference in the self-esteem rates reported by parents at the time of the follow-up interview. Based on these results, Head Start parents rated their children as having lower self-esteem than parents of children on the wait list.

Overall, results not only did not support the hypotheses of this study, but in many instances, the WLC Group appears to have fared better than children who were able to attend a Head Start program. What does this tell us? Unfortunately, the limited sample size may contribute to the lack of statistically significant differences identified, and it also impacts the inference of this overall study. What this study has served to do is document the need for the assessment of Head Start's long-term impact in more than just areas of cognitive development. Children of low-income families have been well-documented to have significant barriers and risk-factors related to their health, achievement, and psychosocial functioning. Although not the intention of this study, there were results suggesting one of these groups was more likely than the other to have lower self-esteem rates, but both groups revealed low standard scores on this scale. Head Start has been in effect for over forty years, and it has been described as one of America's most "successful social experiments." Its intentions are well-founded, and the interventions purported are well-needed for this population. If it really is the case, however, that its impact is not maintained after children exit the program, then perhaps the methods of intervention should be revisited.

It is of importance to note that 92 percent of the participants in this study were of Hispanic descent, and 64 percent of the interviews were conducted in Spanish. By and large, families of Hispanic children or with caregivers whose primary language was Spanish, were much more likely to agree to participate in the study than families of other ethnicities. As all families were recruited and interviewed in their primary language, it is speculated that perhaps caregivers whose primary language is Spanish appreciated the

opportunity to contribute to such an effort without facing language barriers in order to participate. When being explained the purpose of the study via telephone, families sounded relieved at not requiring an interpreter (which was usually one of their children), they agreed to participate with little questioning, and they were much more willing to make accommodations to complete the interview. In the event that an appointment was missed, these families would attempt to follow-up with the investigator to apologize and try to reschedule. In two instances, families fluent in English requested to complete the interview in Spanish because it was their preference.

The overrepresentation of Hispanics and families whose primary language is Spanish may have contributed to the overall results of this study. As explained earlier, Hispanic children make up a significant percent of poor children in America, and they have extensive documented health barriers, including higher rates of disease and lower rates of insurance coverage. Considering these documented health disparities is important when interpreting the results of the present study, given that the majority of participants were of Hispanic descent. Is it that children of this ethnicity group require more intense intervention in the area of health?

Several other areas merit further investigation, but were unfortunately not possible due to the limited sample size of the present study. In addition to evaluating ethnicity differences, it is important for future studies to investigate the differences between children who were enrolled in Head Start for one year versus two years. The Head Start Impact Study found that children enrolled in Head Start at the age of three had more positive health gains than children enrolled in Head Start at the age of four,

possibly because of their extended participation in the program. It may be possible that similar results would be detected in long-term impact, and children enrolled in the program for two years would have better results at the time of follow-up than children enrolled only for one year.

While this study may not have resulted in the expected outcomes, the interview process with families shed light on their positive experiences with Head Start. One family shared with the interviewer that both of their children had attended Head Start, and their third child was currently on the waiting list. The child's father shared with the interviewer that Head Start identified a speech delay in their daughter, a concern he felt could have significantly impacted her overall development had it not been detected at the time that it was. He proudly reported that Head Start helped the family attain early intervention for their daughter, who was able to begin first grade with no speech concerns. Moreover, several families inquired as to whether it was possible for the interviewer to help their current children on the waiting list be enrolled in a Head Start classroom in the fall, indicating it had been a positive experience for their older children and they wanted their younger child to have a similar opportunity. One mother, while on the phone scheduling her interview, reported she felt obliged she contribute to any project assessing the effectiveness of Head Start because of how much of a difference it had made in the life of her child.

Limitations

Several limitations were identified and found to impact this study. First and foremost, the mobility of the target population (low-income families) created significant

challenges for recruiting families for participation and completing the follow-up interviews. Immediately, 72 percent (455) of the children were eliminated from the list of potential participants because of addresses and phone numbers that were no longer valid. Recruitment with the remaining families continued to be difficult because of employment schedules (parents that work more than one job, work weeknights, or on the weekend), no response to telephone calls or messages, and contact information for extended family members (e.g., the contact information provided at the time of Head Start enrollment was for grandparents or aunts and uncles rather than direct caregivers). As a result of recruitment challenges, the sample size for this study was small, in turn increasing the probability of a Type II error.

A study evaluating effectiveness well after the treatment was implemented is often expected to suffer from attrition of the potential participants. In this instance, the children recruited for the study were either enrolled or on the waiting list for Head Start between two to four years ago. Not only is that an extensive amount of time to impact mobility, but it also affected the family's immediate understanding of the study and willingness to participate. Upon learning of the study, the majority of parents questioned their participation, responding with such statements as, "But my child is no longer in Head Start," or "But my child never attended Head Start." Families experienced difficulty understanding the purpose of the project if their children were no longer a part of the program we were attempting to evaluate.

Another limitation is that while all Head Start programs are required to adhere to the Program Performance Standards, individual programs are charged with the

responsibility of determining how the Performance Standards are implemented. Not all Head Start programs operate the same, nor do they engage in the same types of activities. The present study includes participants from only the BVCAA's Head Start program, which serves only children and families in the Brazos Valley. While the Brazos Valley includes seven counties, center-based programs are available only in the cities of Brenham, Bryan, Hearne, Navasota, and Madisonville, and the majority of the participants in this study attended programs in the City of Bryan. The potential participants of this study are representative of only the Brazos Valley Region and the limited amount of participants in the study are made up of 92 percent Hispanic children. Therefore, there is limited inference from this study to other Head Start programs and participants.

Conclusions

Contrary to expected findings, the results did not indicate that the health benefits children gain from Head Start are maintained after children are no longer participating in the program. Some evidence even indicated that the children on the waiting list fared better. Research has provided sufficient evidence that Head Start plays an important role in children's health status while they are enrolled in Head Start, as discussed previously. The population that Head Start serves, however, is frequently documented as having poor health, including increased dental care needs and decreased dental care access, lower immunization rates, and increased prevalence of poverty, long into adulthood. Head Start has undoubtedly provided an effective avenue for meeting the unmet health needs of these children, but it is vital for these families to maintain such health practices.

Meeting the needs is the first step; helping families learn how to prevent these needs is the next milestone to be reached.

Research has demonstrated that efforts focused on improving children's health habits do produce positive health benefits (Wilson & Evans, 2003). The methods Head Start uses to promote positive health habits include multiple variables as well as efforts to foster positive attitudes and beliefs in health behavior change, all areas emphasized by the ecological model of health promotion and Becker's Health Belief Model (Wilson & Evans, 2003). Head Start appears to be a prime opportunity to employ these strategies to help improve the overall health status of low-income families and children, findings not supported by this study. The operational difficulties (participant mortality, representativeness of the sample, mobility of low-income populations, and geographic spread of the target population) do serve to shed light on some of the barriers this population faces. Results confirm the need for early interventions that serve to improve health habits for these low-income children. If this is indeed not occurring, service providers are then faced with the challenge to determine how health benefits gained *during* Head Start can be maintained *after* Head Start participation.

Implications for Research

The operational difficulties encountered during this study impact the inference of results. Future research in this area should identify strategies to address the mortality of the potential research participants. Given the scrutiny that Head Start program effectiveness is under, evaluative efforts of the health component of Head Start should continue. In future attempts, however, research participants should be recruited while

the children are still enrolled in Head Start. One common struggle during recruitment was parents not understanding why they were being asked to participate in a "Head Start Research Project" if their children were no longer enrolled in the program. Conversely, parents of children on the waiting list expressed confusion over being asked to participate in a "Head Start Research Study" even though their children never attended the program. Recruiting during the enrollment year would allow for possible increased understanding of the purpose of the research study by parents, and consequently increased participation.

Recruitment during the Head Start enrollment year (for both the HS and WLC groups) would also help to establish ongoing contact with the family. Mortality of the target population was encountered immediately upon the first attempt of contact. Maintaining ongoing communication with the family following their exit from the program or removal from the waiting list would help to minimize the mortality of the research participants. This ongoing contact and communication with the research participants could also help establish a relationship between the researchers and the families, and perhaps lead to families being more invested in the research study.

Because Head Start programs are allowed the liberty of implementing Program Performance Standards individually, it would be essential to compare Head Start participants across Head Start programs. Differences among participants from unrelated programs could provide insight into the effectiveness of the various strategies employed by the Head Start programs. There is a possibility that the maintenance of positive health habits is influenced by the specific type of approach used to promote healthy

behaviors in children and their families. Future research focused on the effectiveness of the interventions employed to impact positive changes in health habits could have implications for Head Start policy changes.

Implications for Practice

Indication that the Head Start children enrolled in this study did not show significant differences from their waiting list counterparts suggests the need to explore ways to encourage positive health habits post-Head Start participation. As previously mentioned, Head Start is but one year, maybe two years, of "intervention" while the risk factors associated with poverty have a much longer duration. Head Start doesn't "inoculate" children against these risk factors, but is there a way to follow-up with families after Head Start participation to continue to encourage positive health habits? Documented health disparities vividly demonstrate the need for intervention. Despite ongoing national efforts to eliminate disparities, children from low-income families disproportionately encounter poor health, as well as limited access to health care and insurance coverage. These differences are critical at a time when childhood obesity is rising, immunization status is low, and dental health needs continuously go unmet.

Furthermore, Head Start programs should consider implementing evaluative methods within their own programs. The significant amount of money the federal government invests in Head Start programs guarantees that Head Start programs will constantly be asked to prove effectiveness in order to justify the expenses. Head Start provides more than an academic "boost" to low-income children. It takes a holistic approach, attempting not only to meet all of the child's unmet health needs, but also to

help parents continue to meet those needs for their children. Implementing an evaluative component to the program to assess for changes in the child's overall well-being after they have exited the program could provide the information frequently requested by those skeptical of the program's true impact on the nation's poor children.

The importance of positive health in the development of young children is not a debatable topic, but unfortunately there continues to be differential health struggles for children growing up in poverty. As childhood obesity, immunizations, and dental health remain a national concern for all children, service providers of poor children will continue to face even greater challenges. Health promotion is a vital area for all families, but one that becomes critical for families who continually demonstrate unmet health needs and increased health concerns. Head Start serves and meets the needs of these children – the next crucial step will be to ensure continuation of positive health habits beyond the program and into the home.

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APPENDIX A

FOLLOW-UP INTERVIEW: HEAD START (ENGLISH)

The Health Component of Head Start: Potential Impacts on Childhood Obesity, Immunizations, and Dental Health

Follow-Up Interview – Head Start

**** Ask verbatim**
**** Instructions; do not ask**
**** Objective measurement by primary investigator**

The following questions are to get a general idea of your child's current health status. There are no right or wrong answers to any of these questions and we ask that you be as honest and as accurate as possible. If at any time you feel uncomfortable responding to a question, you may refuse to answer and go on to the next question. The questions will vary in topics such as general information, their general health, their eating habits, and how many times they visit the doctor. If you do not understand a question or are unsure of how to answer, you may ask for the question to be explained or repeated.

General Information

Height _____ (in inches)

Weight _____ (in pounds)

What is **[child's name]** birthdate? ____ / ____ / ____

How old was **[child's name]** when he/she first attended Head Start? _____

Did **[child's name]** attend Head Start 1 or 2 years? ❒ **1** ❒ **2**

Did **[child's name]** have siblings that also attended or do attend Head Start? ❒ **Yes** ❒ **No**

If parent answers yes: When did they (sibling) attend Head Start? _____

Did your child attend Head Start for the full school year? ❒ **Yes** ❒ **No**

If parent answers no: How many months did your child attend Head Start? _____

Child General Health

Does **[child's name]** currently have health insurance? ❒ **Yes** ❒ **No**

If parent responds yes: What kind of insurance does he/she have?
❒ Children's Health Insurance Program (CHIP)
❒ Medicaid
❒ Private

If parent responds yes: Not all insurance plans include dental coverage. Does **[child's name]'s** insurance cover visits to the dentist? ❒ **Yes** ❒ **No**

If no dental coverage: Since **[child's name]** does not have any dental insurance, what other ways have you used to cover dental visits or dental work?

_____

Medical providers

Does **[child's name] have a doctor that he/she always visits – someone that you always take [child's name] whenever he/she gets sick?** ❒ **Yes** ❒ **No**

Does **[child's name]** have a dentist that he/she always goes to for dental checkups or when he/she needs work done on his/her teeth? ❒ **Yes** ❒ **No**

Can you please tell me what the date of **[child's name]**'s last dental visit was: ___ /____ / ___

At this last dental visit, what was the reason **[child's name]** had to see the dentist?
❒ Address existing condition
❒ Prevent future conditions; regular check-up

Explanation: _____

_____

How often does **[child's name]** visit the dentist? _____ times/year

Parents take their children to the dentist for different reasons. Does **[child's name]** visit the dentist because he needs dental care or for regular checkups?
❒ Prevention – Regular Checkups
❒ Treatment – Needs Dental Care

Nutritional information

How many times a day does **[child's name]** eat? I know this can sometimes change depending on the day and what you have going on, so please just give me an estimate. _____ times/day

Some children take vitamins or supplements as recommended by a doctor or by another physician. Is **[child's name]** currently taking vitamins or supplements? ❒ **Yes** ❒ **No**

If parent responds yes: Who recommended to you that **[child's name]** take these vitamins/supplements?

_____

Some children do not eat certain foods because of religious, medical, or personal reasons. Are there any foods that **[child's name]** does not eat because of any of these reasons?
❒ **Yes** ❒ **No**

If parent responds yes: What foods do these include?

_____

Is **[child's name]** on a special diet? ❒ **Yes** ❒ **No**
If parent responds yes: Will you please explain why?

_____

Some parents are concerned about what their son or daughter eats – they worry it's not healthy enough or that they don't eat enough. Do you have any worries about the way **[child's name]** eats? ❒ **Yes** ❒ **No**

If parent responds yes: What concerns do you have?

_____

_____

Food Group Eating Frequency (# of timers per week)

I am going to list different types of food that are common in children's diets. Not all children eat ALL of these foods. Please tell me how many times per week **[child's name]** eats the following kinds of food. I know you cannot tell me exactly, but you can just give me an estimate.

Milk, Cheese, Yogurt _____

Rice, Grits, Bread, Cereal, Tortillas _____

Oranges, grapefruit, tomatoes (fruit juice) _____

Oil, butter, margarine, lard _____

Meat, poultry, fish, eggs, beans/peas, peanut butter _____

Greens, carrots, broccoli, squash, pumpkin, sweet potatoes _____

Other fruits and vegetables _____

Cakes, cookies, sodas, fruit drinks, candies _____

Immunizations

Children are recommended to have certain immunizations while they're still young. Some children get them all, some children get some, and some children do not get any. Are **[child's name]** immunizations up to date? ❒ **Yes** ❒ **No**

If parent responds no: There are many reasons children do not have their immunizations up to date. Some examples of reasons include: not doing so for personal reasons, because parents do not know where they can get them, some because the immunizations are too expensive. Can you please tell me why **[child's name]** are not up to date?

_____

_____

_____

If parent responds yes: Can you please tell me why you made sure **[child's date]**'s immunizations were up to date?

❒ Required for day care/school enrollment
❒ Prevention of disease
❒ Recommended by a doctor
❒ Provided by Head Start
❒ Other:

_____

_____

APPENDIX B

FOLLOW-UP INTERVIEW: WAITING LIST (ENGLISH)

The Health Component of Head Start: Potential Impacts on Childhood Obesity, Immunizations, and Dental Health

Follow-Up Interview – Waiting List

**** Ask verbatim**
**** Instructions; do not ask**
**** Objective measurement by primary investigator**

The following questions are to get a general idea of your child's current health status. There are no right or wrong answers to any of these questions and we ask that you be as honest and as accurate as possible. If at any time you feel uncomfortable responding to a question, you may refuse to answer and go on to the next question. The questions will vary in topics such as general information, their general health, their eating habits, and how many times they visit the doctor. If you do not understand a question or are unsure of how to answer, you may ask for the question to be explained or repeated.

General Information

Height _____ (in inches)

Weight _____ (in pounds)

What is **[child's name]** birthdate? _____ / _____ / _____

How old was **[child's name]** when you first signed him/her up for Head Start? _____

Did **[child's name]** have siblings that attended or do attend Head Start? ❒ **Yes** ❒ **No**

If parent answers yes: When did they (sibling) attend Head Start? _____

While **[child's name]** was on the waiting list for Head Start, did you enroll him in another kind of child care or early childhood program? ❒ **Yes** ❒ **No**

If parent responds yes: How long did **[child's name]** attend this program: _____

Child General Health

Does **[child's name]** currently have health insurance? ❒ **Yes** ❒ **No**

If parent responds yes: What kind of insurance does he/she have?
❒ Children's Health Insurance Program (CHIP)
❒ Medicaid
❒ Private

If parent responds yes: Not all insurance plans include dental coverage. Does **[child's name]'s** insurance cover visits to the dentist? ❒ **Yes** ❒ **No**

If no dental coverage: Since **[child's name]** does not have any dental insurance, what other ways have you used to cover dental visits or dental work?

_____

Medical providers

Does **[child's name] have a doctor that he/she always visits – someone that you always take [child's name] whenever he/she gets sick?** ❒ **Yes** ❒ **No**

Does **[child's name]** have a dentist that he/she always goes to for dental checkups or when he/she needs work done on his/her teeth? ❒ **Yes** ❒ **No**

Can you please tell me what the date of **[child's name]**'s last dental visit was: ___ /____ / ___

At this last dental visit, what was the reason **[child's name]** had to see the dentist?
❒ Address existing condition
❒ Prevent future conditions; regular check-up

Explanation: _____

_____

How often does **[child's name]** visit the dentist? _____ times/year

Parents take their children to the dentist for different reasons. Does **[child's name]** visit the dentist because he needs dental care or for regular checkups?
❒ Prevention – Regular Checkups
❒ Treatment – Needs Dental Care

Nutritional information

How many times a day does **[child's name]** eat? I know this can sometimes change depending on the day and what you have going on, so please just give me an estimate. _____ times/day

Some children take vitamins or supplements as recommended by a doctor or by another physician. Is **[child's name]** currently taking vitamins or supplements? ❒ **Yes** ❒ **No**

If parent responds yes: Who recommended to you that **[child's name]** take these vitamins/supplements?

_____

Some children do not eat certain foods because of religious, medical, or personal reasons. Are there any foods that **[child's name]** does not eat because of any of these reasons?
❒ **Yes** ❒ **No**

If parent responds yes: What foods do these include?

_____

Is **[child's name]** on a special diet? ❒ **Yes** ❒ **No**
If parent responds yes: Will you please explain why?

_____

Some parents are concerned about what their son or daughter eats – they worry it's not healthy enough or that they don't eat enough. Do you have any worries about the way **[child's name]** eats? ❒ **Yes** ❒ **No**

If parent responds yes: What concerns do you have?

_____

_____

Food Group Eating Frequency (# of timers per week)

I am going to list different types of food that are common in children's diets. Not all children eat ALL of these foods. Please tell me how many times per week **[child's name]** eats the following kinds of food. I know you cannot tell me exactly, but you can just give me an estimate.

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Rice, Grits, Bread, Cereal, Tortillas _____

Oranges, grapefruit, tomatoes (fruit juice) _____

Oil, butter, margarine, lard _____

Meat, poultry, fish, eggs, beans/peas, peanut butter _____

Greens, carrots, broccoli, squash, pumpkin, sweet potatoes _____

Other fruits and vegetables _____

Cakes, cookies, sodas, fruit drinks, candies _____

Immunizations

Children are recommended to have certain immunizations while they're still young. Some children get them all, some children get some, and some children do not get any. Are **[child's name]** immunizations up to date? ❒ **Yes** ❒ **No**

If parent responds no: There are many reasons children do not have their immunizations up to date. Some examples of reasons include: not doing so for personal reasons, because parents do not know where they can get them, some because the immunizations are too expensive. Can you please tell me why **[child's name]** are not up to date?

_____

_____

_____

If parent responds yes: Can you please tell me why you made sure **[child's date]**'s immunizations were up to date?

❒ Required for day care/school enrollment
❒ Prevention of disease
❒ Recommended by a doctor
❒ Provided by Head Start
❒ Other:

_____

_____

_____

APPENDIX C

DESCRIPTIVE STATISTICS

	Head Start		Waiting List Control	
Variable	*M*	*SD*	*M*	*SD*
Childhood Obesity				
BMI (Time 1)	15.44	1.39	--	--
BMI (Time 2)	17.03	2.41	17.68	4.29
BMI Percentile (Time 1)	46.00	31.68	--	--
BMI Percentile (Time 2)	60.70	29.80	54.87	41.01
Times/day child eats	3.28	.88	3.49	.70
Freq of foods1/week	7.30	5.17	7.00	2.39
Freq of foods 2/week	3.15	2.36	4.89	2.03
Freq of foods 3/week	5.00	2.87	4.83	2.23
Freq of foods 4/week	2.25	2.57	2.33	2.37
Freq of foods 5/week	5.30	2.54	4.97	2.47
Freq of foods 6/week	4.20	2.86	4.27	2.56
Freq of foods 7/week	4.50	2.69	4.68	2.96
Freq of foods 8/week	8.45	7.40	4.77	2.51
Dental Health				
Months since last dental appt	8.20	7.69	7.47	7.37
Frequency of dental visits/yr	1.88	.64	1.80	.84
Child Health Questionnaire (CHQ)				
CHQ-Physical Functioning	82.22	10.73	73.33	16.16
CHQ-Role/Social Emotional/Behavioral	100.00	.00	91.11	26.63
CHQ-Role/Social Physical	93.33	14.05	75.56	34.43
CHQ-Bodily Pain and Discomfort Scale	42.00	6.32	42.67	10.33
CHQ-Behavior Scale	42.88	14.36	37.50	8.21
CHQ-Mental Health Scale	69.17	12.45	66.11	16.51
CHQ- Self Esteem	65.83	12.70	76.11	9.38
CHQ-General Health Perceptions	12.50	9.00	22.22	18.81
CHQ-Emotional Impact on Parent Scale	77.50	17.48	75.83	19.17
CHQ-Parental Impact - Time Scale	75.00	21.15	58.89	19.79
CHQ-Family Activities Scale	67.50	8.74	59.17	21.89
CHQ-Family Cohesion Item	33.00	22.14	36.33	26.76
Physical Summary Scores	38.21	5.24	33.85	8.20
Psychosocial Summary Scores	45.41	3.93	43.80	4.72

		Head Start		Waiting List Control	
Variable		Frequency	Percent	Frequency	Percent
Demographic Information					
Language	English	3	30.0	6	40
	Spanish	7	70.0	9	60
Ethnicity	Hispanic	2	20.0	15	100
	African American	8	80.0	0	0
Insurance (Time 1)	Yes	7	70.0	--	--
	No	3	30.0	--	--
Type (Time 1)	Medicaid	5	50.0	--	--
	Private Insurance	2	20.0	--	--
Insurance (Time 2)	Yes	5	50.0	13	86.7
	No	5	50.0	2	13.3
Type (Time 2)	CHIP	3	30.0	--	--
	Medicaid	2	20.0	10	66.7
	Private	0	00.0	3	20.0
PCP (Time 1)	Yes	5	50.0	--	--
	No	5	50.0	--	--
PCP (Time 2)	Yes	8	80.0	12	86.7
	No	2	20.0	2	13.3
Childhood Obesity					
Wt Cat (Time 1)	Healthy	2	20.0	--	--
	At-risk	6	60.0	--	--
	Underweight	2	20.0	--	--
Wt Cat (Time 2)	Healthy	6	60.0	7	46.7
	At-risk	3	30.0	0	00.0
	Overweight	0	00.0	6	40.0
	Underweight	1	10.0	2	13.3
Eating Concerns	Yes	6	60.0	7	46.7
	No	4	40.0	8	53.3
Immunizations					
Complete (Time 1)	Yes	6	60.0	--	--
	No	4	40.0	--	--
Complete (Time 2)	Yes	9	90.0	14	93.3
	No	1	10.0	1	6.7
Dental Health					
Dental Ins (Time 1)	Yes	3	30.0	--	--
	No	7	70.0	--	--

Dental Ins (Time 2)	Yes	5	50.0	12	80.0
	No	5	50.0	2	20.0
PCD (Time 1)	Yes	6	60.0	--	--
	No	4	40.0	--	--
PCD (Time 2)	Yes	8	80.0	12	80
	No	2	20.0	3	20

Note. Type=Insurance Type, PCP=Primary Care Physician, Wt Cat = Weight Category, Dental Ins=Dental Insurance, PCD=Primary Care Dentist.

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