

THE IMPACT OF EARLY EDUCATIONAL CHILD CARE AND THE AFFECTIVE
QUALITY OF THE HOME ENVIRONMENT ON EARLY ADOLESCENT MENTAL
HEALTH

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ABSTRACT

ANDREA E. MCLAUGHLIN: The Impact of Early Educational Child Care and the Affective Quality of the Home Environment on Early Adolescent Mental Health
(Under the direction of Elizabeth Pungello)

The nature in which an early educational intervention, the affective quality of the early childhood home, and the early adolescent home environment influence mental health outcomes in early adolescence was examined using an experimental, longitudinal design. All participants were enrolled as infants in a randomized trial of early educational intervention. The study sample consists predominately of African-American individuals born into low-income, high-risk families. Within the present study treatment groups were not found to differ significantly from one another on overall levels of internalizing and externalizing symptoms. Post-Hoc analyses revealed that a significantly greater number of individuals in the control group experienced symptoms of externalizing psychiatric disorders falling in the borderline and clinically significant range. Treatment was not found to significantly moderate the influence of the early home environment on early adolescent mental health outcomes, nor was the early home environment found to significantly moderate the impact of the early adolescent home on early adolescent mental health outcomes. Previous research and theoretical evidence suggest that high-quality early educational child care programs may benefit children's socioemotional outcomes. However, few early educational programs have examined direct indicators of mental health (i.e., internalizing, externalizing symptoms). Additional research is needed to determine whether early educational child care programs are associated with mental health benefits that persist into early adolescence.

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CHAPTER I:

INTRODUCTION

An astonishing number of today's youth experience mental health problems that adversely affect normal development and impair functioning within numerous domains. The MECA study (Methodology for Epidemiology of Mental Disorders in Children and Adolescents) found that approximately 21% of US children ages 9-17 experience at least minimum impairment due to a diagnosable psychiatric disorder, while 11% have psychiatric disorders characterized by significant functional impairments (Report of the Surgeon General, 2001). Often such mental health concerns involve internalizing symptoms, such as anxiety and depression. One population study found that as many as 10 to 15 % of children and adolescents experience symptoms of depression, and the combined prevalence of all anxiety disorders (e.g., separation anxiety, obsessive compulsive disorder) for children ages 9-17 has been estimated to be as high as 13% (Report of the Surgeon General, 2001). Comparable rates of externalizing disorders have also been reported, as rates of children and adolescents with disruptive behavior disorders (e.g., Oppositional Defiant Disorder) were found to approximate 10% (Report of the Surgeon General, 2001).

Existing research suggests that mental health problems in childhood and adolescence are likely to influence functioning in multiple domains and across several years of one's life. Many mental health difficulties that initially present in children and adolescents have been noted to persist into adulthood (Petersen et al., 1993; Lewinsohn, Hoberman, & Rosenbaum, 1988; Rao, Hammen, & Daley, 1999; Tolan & Dodge, 2005; Lewinsohn et al., 1994). For

instance, one study found that over 50% of children who reported an initial depressive episode experienced subsequent episodes of depression (McCauley et al., 1993). Similarly, other research has shown that preadolescent or adolescent onset of clinical depression places individuals at considerable risk for depression in adulthood, and may possibly predispose such individuals to other serious psychiatric illness as adults (Peterson et al., 1993; Rutter, Kim-Cohen, & Maughan, 2006).

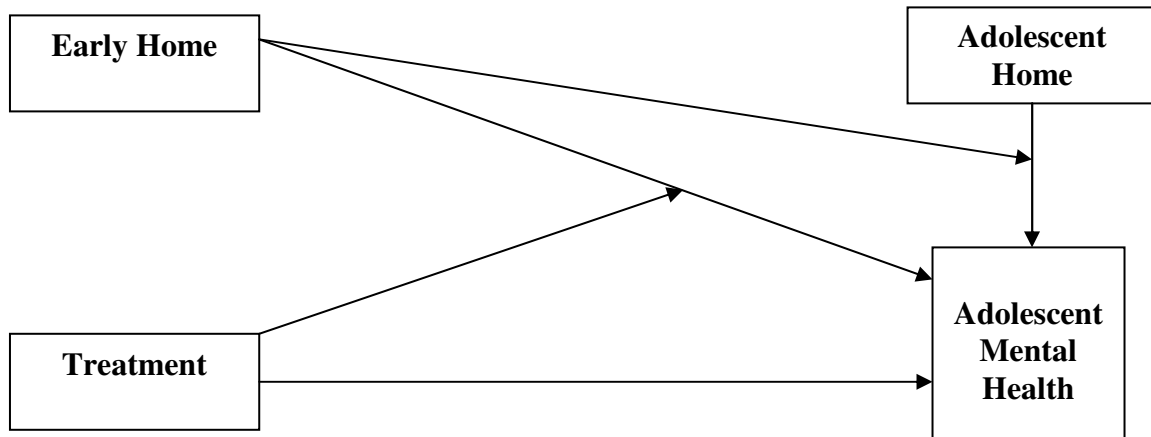
Subclinical symptoms of psychological disorders, in addition to clinical symptomatology, warrant intervention, as subclinical symptoms are likely also associated with high levels of distress which disrupt one's functioning and development (e.g., Lewinsohn, Solomon, Seeley, & Zeiss, 2000). Furthermore, when such symptoms are accompanied by chronic distress and impaired functioning they are likely to be on the same continuum as clinical cases (Hammen & Rudolph, 2003; Rutter et al., 2006). Failure to intervene with children and adolescents experiencing subclinical symptoms may exacerbate difficulties such that clinical levels of symptomatology may become present (e.g., Mason et al., 2004). Child and adolescent mental health deserves substantial attention to improve both individuals' current functioning and enhance later psychological well-being (Tolan & Dodge, 2005).

Due to the fact that adolescence is a developmental period characterized by significant transitions, adolescents may be particularly vulnerable to mental health difficulties. Biologically, adolescents are undergoing physiological changes and becoming more physically mature; socially, adolescents are making the transition to adulthood, a time that introduces greater challenges, expectations, freedom, responsibility and independence; psychologically, adolescents are developing greater insight and awareness (Foreyt, Poston,

Winebarger, & McGavin, 1998; Petersen et al., 1993). The goals of the present study were to examine the impact that the affective quality of the early childhood and early adolescent home environments may have on early adolescent mental health, and the protective effect early intervention may have on early adolescent symptoms of internalizing and externalizing disorders (see Figure 1). Literature building up to the importance of examining this study's hypotheses will be reviewed in the following sections. An overview of the Ecological Theory of Development will be reviewed, as will literature relevant to the study of poverty, poverty's impact on the home environment and child and adolescent mental health, the importance of early childhood experiences, and early educational interventions that may promote the socioemotional adjustment of youth growing up in poverty.

Figure 1

Hypothesized Relationships Between Early Experiences and Early Adolescent Outcomes



Ecological Theory of Child Development

The theoretical framework on which this study is based is Bronfenbrenner's ecological theory of child development (Bronfenbrenner, 1986). The constant interplay between systems that characterizes the ecological theory helps explain the pathways through which environmental variables and processes influence children's mental health, as well as how the child influences his or her environment. Bronfenbrenner's ecological theory states that environments are not independent of one another; processes operating in disparate environments interact and influence one another (Bronfenbrenner, 1986). Children are influenced by factors within their homes, schools, child care, and other settings in which they spend a significant amount of time. Furthermore, children are affected not only by events occurring within such settings, they are also influenced by the variables and processes operating within distal settings (e.g., parent's place of employment), and the larger socio-cultural context (e.g., society's beliefs and values) (Bronfenbrenner, 1986).

The ecological theory views the child as an active change agent, positing that a reciprocal relationship exists between the child and his or her environment, such that the child acts upon and influences the environment, which in turn influences the child (Garbarino & Ganzel, 2000). Throughout development, the child is physically changing, as is the child's perception of the environment and interpretation of change. Living and interacting within microsystems brings about change (Bronfenbrenner & Morris, 1998). Microsystems are the primary ecological contexts for human development, the immediate environments that envelop children. Settings such as the child's home, child care center, and school are microsystems in which children spend a considerable amount of time and are likely to be particularly influential to development and psychological functioning.

The quality of a microsystem has a significant effect on the transactions that occur between the child and his or her environment. Examples of proximal processes occurring within microsystems which might promote positive socioemotional development are healthy, prosocial relationships with peers, interactions with supportive child care staff, and caring parent-child relationships. The ecological theory suggests that a supportive and responsive environment promotes healthy development. On the other hand, the “greater developmental impact of proximal processes on children growing up in disadvantaged or disorganized environments is to be expected to occur mainly for outcomes reflecting developmental dysfunction” (Bronfenbrenner & Morris, 1998, p. 1001). In these environments the quality of the physical home environment and the parent-child relationship may be compromised by impoverished, disadvantaged circumstances, thereby reducing the quality of proximal processes (Bradley, Corwyn, McAdoo, & Coll, 2001; McLoyd, Jayaratne, Ceballo, & Borquez, 1994; McLoyd, 1990).

Mesosystems are relationships between microsystems, such as the interaction between the child’s home and child care setting. The nature of the connections between settings is important. “We measure the richness of a mesosystem in the number and quality of its connections...We ask, do staff visit the child at home? Do the child’s parents know his or her friends at the child care? Do parents of children at the center know each other?” (Garbino & Ganzel, 2000, p. 79). Alignment of positive values and interactions across settings helps to promote positive child development. Additionally, by uniting individual efforts across different environmental contexts one may better ensure a child’s success in a variety of domains (i.e., school, home).

While microsystems and mesosystems are proximal settings that influence child development, distal ecological contexts also impact children through their effects on proximal processes. Garbino and Ganzel (2000) note the tremendous utility the ecological approach offers for conceptualizing child development, as this approach leads one to look beyond the child and family by emphasizing how individuals and settings the child has no direct contact greatly impact child development. For example, exosystems are distal environments that affect child development, settings such as the parents' workplace or school boards (Garbino & Ganzel, 2000). Child development may either be enhanced or placed at greater risk depending upon the interactions that occur within these remote systems. For instance, stressful work environments, long hours, and unemployment may negatively impact children through diminished financial resources, greater stress on the parent-child relationship and reduced parental supervision. Macrosystems, like exosystems, contain distal variables, processes, and values that indirectly influence children. Macrosystems "reflect peoples shared assumptions about how things should be done, as well as the institutions that represent those assumptions" (Garbarino & Ganzel, 2000, p. 80). Cultural beliefs towards social reform and welfare policies are examples of processes that are played out at the macrosystem level but which impact individual families and children.

Children in Poverty

An abundance of literature documents the detrimental effects of poverty, illustrating through an ecological approach how impoverished environments affect children (i.e., Duncan, Brooks-Gunn, & Klebanow, 1994; McLoyd, 1990, 1998). For instance, findings reflect the manner in which poverty compromises the quality of the home environment and thus negatively impact children's psychological well-being (e.g., Conger et al., 1992; McLoyd, 1994). The mental health of children in poverty is of growing importance, as the number of youth living in poverty has been noted to increase over the years, remaining higher than that for individuals between the ages of 18-64 (U.S. Census Bureau, 2002).

Children from racial and ethnic minority backgrounds are often at a greater risk for growing up in impoverished environments and experiencing economically disadvantaged circumstances (McLoyd, 1990; McLeod & Shanahan, 1993). McLeod and Shanahan (1993) used data from the 1986 National Longitudinal Survey of Youth (NLSY) to study the effects of poverty on children's mental health, and found that within this large sample, the number of children who had never lived in poverty varied greatly by race. Twenty-one percent of African-American or Hispanic children had never lived in poverty compared to 54% of non-Hispanic white children. More recently, the U.S. Census Bureau indicated that poverty rates among African-Americans approximated 24% in 2002; this was the highest rate of poverty reported among all racial and ethnic categories. African-American children are not only more likely to live in poverty, but are also at an increased risk for experiencing persistent poverty, spending a greater number of years living below the poverty line (McLoyd, 1990).

Impact of Poverty on Children's Mental Health

Numerous studies have found that children living in impoverished environments are more likely to suffer from mental health problems than children who do not live in poverty (e.g., McLoyd, 1990, 1998; Duncan et al., 1994; Sameroff & Seifer, 1995; Costello, Compton, Keeler, & Angold, 2003). Buckner and Bassuk (1997) found that diagnosable psychiatric disorders and their associated impairments affected approximately 32% of children living in poverty. In addition, a recent survey published by the Center for Disease Control (2004) reports that “poor persons were four times as likely as nonpoor persons to report serious psychological distress” (CDC, 2004, p. 5).

Poverty's impact on a variety of outcomes in an individual's life has been widely studied, and findings consistently link poverty to a multitude of negative consequences (see review by Evans, 2004). For example, in a recent study regarding the origins of mental illness, researchers analyzed the effects of poverty on family circumstances and children's psychological functioning (Costello et al., 2003). A casino built on a Native-American reservation in the community under observation altered economic circumstances for select families approximately halfway through the study, thereby allowing for an examination of the effects of socioeconomic status on children's mental health. Findings indicated that family income was related to psychiatric symptoms; specifically, low family income was associated with an increased number of psychiatric symptoms and a greater number of diagnosable psychiatric disorders for children. However, children whose families moved out of poverty after the casino opened, on average, reported a significant decrease in psychiatric symptoms. This change was so dramatic that “children of ex-poor families had the same number of psychiatric symptoms as the never poor, and significantly fewer symptoms than

the persistently poor” (2003, p. 2025). Thus, the presence of poverty, as well as the duration for which children live in impoverished environments is linked to negative outcomes. To further explain the nature in which children’s psychological functioning is compromised by environmental stressors, and obtain a better understanding of these processes, several researchers have examined the pathways through which poverty affects children.

Poverty’s Influence on the Home Environment

Poverty’s adverse effect on children’s mental health may be due, in large part, to its influence on the home environment. Findings tend to point to family circumstances, and interactions within one’s home as proximal factors that mediate the effects of socioeconomic disadvantage on psychological distress (e.g., Costello et al., 2003; Duncan et al., 1994; Duncan & Brooks-Gunn, 2000). A wealth of literature indicates that economic disadvantage reduces not only the availability of tangible resources (i.e., goods, services, safety and quality of the physical home environment), but also compromises the affective quality of the home and the care-giving environment (Bradley et al., 2001; Garrett, Ferron, Ng’Andu, Bryant, & Harbin, 1994; Felner et al., 1995; Brooks-Gunn, Klebanov, & Liaw, 1995). Bradley et al. (2001) used data from the National Longitudinal Survey of Youth (NLSY) to look at the effects of ethnicity and SES on the quality of the home environment and found that “being poor effects nearly every aspect of children’s home lives...from parental responsiveness to parental teaching, from the quality of the physical environment to the level of stimulation for learning present and from the likelihood of having significant contact with one’s father” (p. 1863). Bo (1994) as cited in Evans (2004) found that adolescents from families of lower socioeconomic standing spent less time with their parents than adolescents from families of

higher social standing, had smaller social support networks, and were more heavily dependent upon peers for support than adults.

Poverty not only reduces the probability caregivers will be physically present in the home, but also decreases the likelihood caregivers will be emotionally available. Numerous studies suggest that the effect of poverty on children's mental health is largely mediated through its impact on caregivers' psychological functioning (Conger et al., 1992; Conger et al., 2002; Conger et al., 1993; Sameroff & Seifer, 1995; McLoyd et al., 1994; Evans, 2004; McLoyd, 1990, 1998). Lempers, Clark-Lempers, and Simons (1989) found that economic hardship indirectly contributed to adolescent "depression and loneliness by increasing inconsistent, rejection-oriented discipline and by decreasing parental nurturance" (p. 31). Similarly, inconsistent, rejection-oriented discipline was positively related to adolescent delinquency and drug use (Lempers et al., 1989). Several studies point to the manner in which economic hardship adversely affects caregivers' psychological functioning, induces stress upon the parent-child relationship, and negatively impacts adolescent mental health.

Expanding upon the relationships between economic stress, parenting, and children's psychosocial functioning, Conger et al. (1992) studied the pathways through which economic hardship affects early adolescent European-American boys living in intact two-parent families. Economic pressure was found to be related to caregivers' depressed moods. Parental depression was in turn positively associated with marital conflict and disrupted parenting, which negatively influenced early adolescent adjustment. This study was later replicated, and the findings were confirmed within a sample of early adolescent European-American females (Conger et al., 1993). The "family stress model" has helped illustrate how economic hardship affects both males and females, individuals from various racial

backgrounds, and a diverse composition of two-caregiver families (i.e., mother, father, grandmother, stepfather) similarly (Conger et al., 2002). Over the course of these studies, caregivers' psychological functioning emerged as an influential variable that mediates the relationship between financial strain and adolescents' psychological well-being. Namely, caregivers' psychological distress adversely affects the caregiver-child relationship through disrupted parenting practices, which predict poorer adolescent adjustment, as evidenced by higher internalizing and externalizing symptoms (Conger et al., 2002; Conger, Ge, Elder, Lorenz, & Simons, 1994; Lempers et al., 1989; Ge, Conger, Lorenz, & Simons, 1994).

Studies researching the effects of economic hardship on single-parent families have yielded results consistent with those obtained in studies of two-caregiver families. Mothers with fewer financial resources report greater psychological distress, and the pathways through which children are affected by poverty are similar in both two-parent and single parent households (e.g., McLoyd, 1990; McLoyd et al., 1994). McLoyd et al. (1994) examined the affects of unemployment and work interruption on maternal psychological functioning, parenting, and the socioemotional functioning of adolescents. Adverse financial circumstances negatively influenced mothers' psychological functioning, which in turn impacted parenting and the mother-child relationship. Mothers experiencing greater depressive symptoms tended to exhibit punitive and harsh parenting practices, which were linked to increased cognitive distress and depressive symptoms in adolescents. An abundance of literature illustrates how poverty affects children through its negative impact on the parent-child relationship, repeatedly displaying how children experiencing difficult economic circumstances (e.g., parental job loss, poverty) have increased emotional and behavioral problems than children in more economically advantaged circumstances (McLoyd, 1990).

The Timing of Poverty on Development

While numerous studies have examined the detrimental effects of poverty on child development, few studies have examined the timing of poverty on children's developmental outcomes. Due to the fact that children and adolescents differ biologically and cognitively, one would expect that economic stressors differentially impact individuals and outcomes depending upon one's developmental stage, as these developmental differences are likely to affect one's experiences and interactions with the environment (Guo, 1998). Some researchers (e.g., Williams, 1972), cited in Guo (1998), posit that a critical window exists early in life during which individuals are most heavily impacted by environmental influences and are most receptive to learning. For instance, Guo reviews the work of Jencks (1972), who finds that while individuals' cognitive abilities are most malleable in the early childhood years, these intellectual abilities stabilize in later childhood. In contrast, others suggest that environmental influences continue to significantly impact individuals and various developmental outcomes throughout life (Mickelson, 1990; Lewis, Feiring, & Rosenthal, 2000).

Contrasting the proposition that early experiences greatly affect developmental outcomes with the view that one's development is significantly influenced by later life experiences, Guo (1998) found that the timing and presence of poverty in one's life differentially influenced cognitive and achievement outcomes. Poverty experienced in childhood was noted to more strongly affect individuals' cognitive abilities while poverty in adolescence more strongly influenced achievement outcomes. Guo attributes these findings to the significant impact environmental factors impress upon various developmental outcomes at different stages of development. He postulates that ability may be a more

established, permanent trait that is not as vulnerable to impoverished environmental conditions as achievement. Poverty appears to exert differential effects upon the developmental outcomes of cognition and achievement depending upon a child's developmental stage, suggesting that other developmental outcomes (i.e., socioemotional development) may also be most vulnerable to impoverished conditions during specific stages of development.

In contrast, Duncan et al. (1994) examined the timing of poverty on developmental outcomes, and reported that the timing of poverty was not significantly related to cognitive ability, externalizing problems, and internalizing problems for young children. Using the data set from the Infant Health and Development Program (IHDP), these investigators found that poverty status both early and later in childhood (age 5) had an equally negative effect on each of the noted developmental outcomes (1994). Similarly, the National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network (2005) examined the duration and developmental timing of poverty on children's cognitive and socioemotional outcomes from birth until age 9, and concluded that the developmental period during which children experienced poverty (i.e., prior to age 3 versus after age 4) did not predict developmental outcomes so much as the duration for which youth endured impoverished conditions. Conger, Conger, and Elder (1997) add to the noted literature through their study of the timing of poverty in adolescence. These researchers monitored their sample for approximately four years as individuals progressed from early adolescence (ages 12-14) to late adolescence (15-17). No significant relationship was found between the timing of poverty (early adolescence versus late adolescence) and adolescent symptoms of externalizing and internalizing disorders. The non-significant results concerning the timing of

poverty on development may be due to the brief time frame participants were followed in each of the noted studies. Had participants been followed through childhood to adolescence, findings may have differed. Given the fact that these researchers examined the timing of poverty over fairly restricted developmental periods, additional research is required to more fully examine the timing of poverty on child and adolescent mental health outcomes.

Affective Quality of the Home Over Development

The manner in which poverty influences more proximal factors, such as the affective quality of the home at different stages in development, and thereby the psychological well-being of early adolescents is also an area deserving attention. This is an underrepresented topic in literature, with no published studies to date examining the impact the affective quality of the home has on individuals during different developmental stages. Thus, the present study examined the emotional climate of the home in early childhood and early adolescence, assessing whether the affective quality of the early home moderates the affective quality of the early adolescent home on early adolescent mental health. Literature consistently points to the importance of the home and proximal processes within this setting (e.g., parenting behavior) as significant factors impacting adolescent adjustment (e.g., Conger et al., 1993; Conger et al., 2002). Much of the previously reviewed literature documents the nature in which environmental stressors, such as disrupted parenting and poverty increase adolescent vulnerability; it is important to also consider protective factors that may counteract or lessen the influence of less optimal environments.

Protective Effect of Early Experiences

Early experiences may set the stage for how the child responds to later experiences (Gottlieb, 1997; Masten et al., 1999; NICHD Early Child Care Research Network, 2006). Attachment theorists assert that children's early experiences significantly impact later experiences, "creat[ing] the lenses through which children interpret and make sense of subsequent experiences" (NICDH Early Child care Research Network, 2006, p. 38). However, these individuals also recognize the potential for change to occur throughout development. Similarly, Gottlieb's developmental systems view posits that the groundwork for development is established early on and that later experiences interact with the extant characteristics comprising this framework to produce new characteristics. Gottlieb posits that "emergent properties arise through reciprocal interactions (coactions) among already existing constituents...individual development is characterized by an increase of complexity of organization- that is, the emergence of new structural and functional properties and competencies-at all levels of analysis (molecular, subcellular, cellular, organismic) as a consequence of horizontal and vertical coactions among its parts, including organism-environment coactions" (1997, p. 90). Thus, as children develop, their experiences and interactions with the environment become more sophisticated, contributing to the child's increasing complexity. Experiences early in development influence how the child develops, and his or her later experiences with the environment.

One way experiences and strengths acquired early in life may influence subsequent experiences is by buffering youth against adversity later in development. In an urban sample of youth followed from childhood through adolescence within a study of "naturally occurring resilience," Masten et al. (1999) found that among youth who had experienced

comparable levels of severe, chronic adversity, individuals with higher IQ scores (i.e., average or above average IQ) displayed significantly less antisocial behavior than those with lower IQ scores. Childhood IQ continued to moderate the effect of adversity on conduct in late adolescence, suggesting that early cognitive functioning has a lasting impact on socioemotional development (Masten et al., 1999). In addition to finding that IQ provides a protective effect against child and adolescent maladjustment, youth with high quality parent-child relationships were also noted to display significantly more prosocial behavior than youth who also faced severe, chronic adversity but did not experience high quality parenting. Characteristics of the parent-child relationship and parenting in childhood continued to influence peer social competence (i.e., popularity and acceptance with peers, ability to form and maintain friendships) throughout adolescence, influencing adolescent social competence beyond that which might be attributed to parenting in adolescence.

The significance of early experiences on later developmental outcomes is also noted in attachment literature which documents how mother-infant relationships affect how children experience later changes in maternal care-giving (NICDH Early Child care Research Network, 2006). In a large sample of youth followed through the early childhood years, infants who were securely attached to their mothers appeared protected against less optimal caregiving in early childhood (i.e., preschool, kindergarten, and first grade), while participants with insecure early attachments were found to be at a greater risk for maladjustment and more vulnerable to changes in parenting quality (2006). For children with early secure attachments, declines in quality child rearing were not associated with increased classroom externalizing problems; however, children with insecure attachments as infants (i.e., 15 months), who later experienced declines in maternal caregiving, were

significantly more likely to display increased classroom externalizing problems. Children who had formed early secure attachments in infancy appeared to be buffered against the effects of declining maternal caregiving in early childhood; thus, it appears that “early attachment may have served as a protective factor against declines in optimal parenting” (2006, p. 54)

The previously noted findings suggest that various traits and experiences, acquired early in life, may protect youth from less optimal relationships and situations later in development (e.g., NICDH Early Child care Research Network, 2006; Masten et al., 1999). Research has shown how IQ, parenting quality, and early attachment may provide an early foundation for children that promotes positive socioemotional outcomes later in life. Similarly, the affective quality of the early home environment may have such an effect on early adolescent psychological functioning. The present study examined the extent to which the affective quality of the early home moderates the impact of the emotional climate of the early adolescent home on internalizing and externalizing symptoms in early adolescence. Within the current study, individuals with better quality early home environments were hypothesized to be better protected against the effects of a poor quality early adolescent home, and therefore experience fewer internalizing and externalizing symptoms of psychological distress as early adolescents than youth with both poor quality early childhood and early adolescent home environments

Early Educational Interventions

Given the challenges individuals in adverse environments experience, such as impoverished home environments, several programs have been developed in an effort to buffer children and families from the negative outcomes often associated with poverty. Many of these programs include interventions that are consistent with the ecological theory of development. While many programs have sought to reduce the detrimental effects of poverty on child development, the specific interventions and variables of interest often differ. A number of programs have been implemented with impoverished, at-risk samples to reduce poverty's impact on children's cognitive abilities and academic achievement. The theoretical rationale behind the development of these educational programs is that enhancement of the early environment will help break the cycle of poverty by promoting school readiness and educational success, which in turn will increase the likelihood participants will experience future occupational, social and cultural benefits (Campbell & Ramey, 1994; Schweinhart, Barnes, Weikart, 1993).

Given the goals of this project, the programs that will be reviewed here are those that provided early educational interventions to high-risk samples through either a child care or preschool model and for which longitudinal data into early adolescence is available. The Perry Preschool Project (Schweinhart & Weikart, 1997), Chicago Parent Child Center program (Reynolds, 1994), Syracuse University Family Development Research Program (Lally, Magione, & Honig, 1988), Abecedarian Project (Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001), and Project CARE (Wasik, Ramey, Bryant, & Sparling, 1990) are five early educational programs that have demonstrated long-term positive effects for low-income children. The findings from these early educational programs illustrate how

comprehensive and intensive child care services, introduced early in a child's life, can positively influence child development and produce lasting benefits for high-risk, low-income children. Each program is grounded in strong theoretical support and provided stable, comprehensive, educational child care services to treated children. Programs provided early childhood interventions for a minimum of two years and introduced such services during infancy or the preschool years.

Program Models

The age and duration for which preschool services were provided, as well as the opportunity for individuals to receive school-age treatments varied among programs. The Abecedarian, CARE, and Syracuse programs, consistent with a child care model, provided services to participants from infancy to school age, while the Perry Preschool and Chicago programs followed a traditional preschool model that served 3 and 4 year-olds. Additionally, school-age educational interventions were provided in the Chicago, Abecedarian, and CARE studies. The Chicago study offered a follow-on component in the primary grades that extended treatment services through third grade for select participants; services included slightly reduced classroom sizes, coordinated curriculum, individualized instruction, and parental involvement in activities (Reynolds, 1994). Similarly, following the early intervention phase, Abecedarian program participants were randomly assigned a home/school resource teacher (HST) from Kindergarten to third grade, and treated children in Project CARE also received a HST. The HST was designed to serve as a liaison between the family and school, to increase parent and child educational involvement in the schools, and advocate for the integration of academics and education in the home (Clarke & Campbell, 1998).

The degree to which families were involved in treatment varied among programs. The Perry Preschool, Syracuse University, and CARE programs included a home visiting component where trained professionals visited the mother and child in the home (Yoshikawa, 1995; Wasik et al., 1990). To increase parental involvement in the child's education and provide support to these parents, home visits occurred approximately once a week for treated participants in the Perry Preschool and Syracuse University programs. The home-based, family education intervention was delivered to Project CARE participants through home visits which occurred 2-3 times a month during the first 3 years of the intervention, and varied thereafter based upon parental preference (Wasik et al. 1990). Families from both the treated and control groups in Project CARE and the Abecedarian Project received emergency social service assistance. Additionally, parents in the Abecedarian Project were involved in the Center's advisory board, provided informative programs on parenting, and participated in social events held at the child care center (Clark & Campbell, 1998).

Early Educational Program Effects on Cognitive and Academic Outcomes

The Perry Preschool, Chicago, Syracuse University, Abecedarian, and CARE programs originally sought to promote positive intellectual and academic outcomes for impoverished, at-risk youth. Results indicate that each of these interventions, as intended, successfully enhanced the cognitive and academic performance of individuals at-risk for poor cognitive and educational outcomes. (Wasik et al., 1990; Campbell et al., 2001; Lally et al., 1988; Schweinhart & Weikart, 1997; Reynolds, Temple, & Ou, 2003). Treated participants in each program, on average, outscored individuals in the control groups on standardized measures of intellectual ability and academic achievement. Moreover, gains in intellectual and academic performance were noted to persist into young-adulthood for treated

participants in the Abecedarian Program (Campbell et al., 2001). In addition, results from early educational interventions suggest that preschool treatment is associated with higher educational attainment and fewer special education services (Schweinhart et al., 1993; Reynolds et al., 2003; Wasik et al., 1990; Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002).

Early Educational Program Effects on Socioemotional Functioning

Each of the previously noted programs were originally designed to reduce the impact of poverty on children's intellectual and academic outcomes; however, given their design, one might also expect to observe benefits in socioemotional functioning. The interventions themselves, specifically the direct services early educational child care programs provided children, are also likely to have promoted positive social and emotional outcomes for program participants. Through an examination of existing research regarding the quality of child care, Vandell (2004) comments on the work of individuals such as Burchinal, Cryer, Clifford, and Howes (2002) who found that caregivers with more formal education and child-care training had more stimulating and supportive interactions with children. The structure of child care has also been noted to affect adult-child interactions and children's outcomes. Specifically, a small child to caregiver ratio allows caregivers to spend less time managing disruptive behavior; caregivers in such centers are noted to be more supportive, warm, socially stimulating, and responsive towards children (Vandell, 2004). Responsive and supportive child care environments with lower adult-child ratios may also positively influence children's socioemotional adjustment, as evidenced by greater prosocial and positive interactions with peers (Vandell, 2004). The Abecedarian Project and Project CARE possessed many of the qualities believed to be characteristic of quality child care programs,

such as low caregiver-child ratios, and caring, responsive, and supportive interactions between children and child care staff. Additionally, the caregivers for these early educational programs provided a stable influence in the children's lives. Caregivers followed the same group of children throughout the preschool years, allowing stable and secure relationships to develop between the children and caregivers at the Center.

Although the educational and intellectual benefits of these early educational interventions have been widely documented and findings are relatively consistent across programs, the effects of early educational programs on socioemotional outcomes are less well understood. The Abecedarian, Syracuse, Chicago and Perry Preschool programs each have data related to indices of social and emotional functioning; however, findings vary among programs, as do the specific variables measured and designed to reflect socioemotional adjustment within the samples. Findings from the Chicago, Perry Preschool and Syracuse studies suggest that early educational interventions have positive effects on children's social and emotional adjustment in the early childhood and/or early school years. Treated children have been reported to exhibit higher social and emotional functioning at 36 months of age, and better socioemotional adjustment and classroom behavior in the elementary years (Lally et al., 1988; Reynolds, 1994; Weikart, Bond, & McNeil, 1978).

Few early educational programs have collected data into adolescence or young-adulthood that would allow for an examination of the long-term effects of program participation on participants' mental health outcomes, such as anxiety and depression. At the present time, only the Chicago program has reported longitudinal data on depressive symptoms within its sample. Investigators recently examined the effects of early family risk indices and preschool intervention on school drop-out, juvenile delinquency, and mental

health (Smokowski, Mann, Reynolds, & Fraser, 2004). A three-item true/false questionnaire was used to measure adolescent depressive symptoms, and a response of “yes” to any one of the three items served as the indicator of depression. Investigators of the Chicago study found that early intervention protected program participants against all 3 adolescent outcomes, suggesting that early educational programs may be associated with fewer internalizing symptoms for treated participants. Indices of delinquency and crime are generally the variables that most closely approximate participants’ mental health outcomes in longitudinal reports. Reductions in delinquency and criminal behavior were reported for treated participants in the Chicago, Syracuse, and Perry Preschool programs (Reynolds et al., 2003; Reynolds, Temple, Robertson, & Mann, 2001; Schweinhart et al., 1993; Lally et al., 1988).

In contrast, non-significant and negative outcomes related to participants’ behavioral adjustment and socioemotional functioning have also been reported. No significant differences in the number of charges filed against late adolescents were found between the treated and control groups in the Abecedarian study (Clarke & Campbell, 1998), nor were there significant treatment/control differences in self-reported criminal convictions and sentences among its young adults (Campbell et al., 2002). Adding to the complicated and inconsistent reports are findings suggesting that programs have little or no effect on childhood socioemotional functioning. Teacher ratings of program participants in the Perry Preschool program indicated that treated children were better behaved in the classroom than control children in some early elementary grades (e.g., first and third) but not in others (e.g., kindergarten and second grade) (Weikart et al., 1978). Additionally, treated children have been reported to outscore children in the control group in terms of bossiness, defiance, and displays of verbal and physical aggression (Haskins, 1985; Lally et al., 1988). Reports from

the Abecedarian Project have noted that treated children in the first 3 cohorts were rated by teachers as more verbally and physically aggressive than control children in the primary grades; a finding that was not replicated in later cohorts, nor in analyses of Project CARE participants (Haskins, 1985).

Presently, findings related to the socioemotional and behavioral adjustment of early educational program participants in early childhood, adolescence, and young-adulthood are inconsistent. Reports concerning the potential benefits these programs may have on externalizing difficulties (i.e., delinquency, physical aggression) are inconclusive both across and within studies. Even less is known about the benefits of early educational programs on internalizing problems, such as anxiety and depression. The samples each of the aforementioned programs served was at-risk not only for poor academic and cognitive outcomes, but as extant research documents, these individuals growing up in impoverished environments were at an elevated risk for poorer mental health outcomes than youth in more economically advantaged circumstances (Costello et al., 2003; McLoyd, 1990;1998). Whether early educational programs may protect high-risk samples against internalizing and externalizing symptoms of psychological distress is an area deserving further study. Given the significant changes youth experience as adolescents, and research documenting the influences of the emotional climate of the home and parenting on early adolescent adjustment, the present study will examine the impact of early educational intervention on early adolescent mental health (e.g., Foreyt et al., 1998; Conger, Conger, Matthews, & Elder, 1999). In addition to having a direct effect on mental health, early educational interventions may moderate the influence of the affective quality of the early home environment on

internalizing and externalizing symptoms in early adolescence, as supportive and stable child care settings may provide a protective influence against less optimal home environments.

Role of Gender in Symptom Presentation

Research documenting disparate rates of internalizing and externalizing symptoms among males and females points to the importance of recognizing the role gender plays in the study of early adolescent mental health. Internalizing symptoms are often more commonly reported among adolescent females, while adolescent males are more often reported to exhibit externalizing behavior problems (e.g., Conger et al., 1997; Petersen et al., 1993). Depressive symptoms have been noted to greatly increase as individuals transition from childhood to adolescence, and studies point to the earlier onset of puberty as a factor that may explain the higher rates of depressive symptoms found among young adolescent females (Ge et al., 2003; Marcotte, Fortin, Potvin, & Papillon, 2002; Rutter, 1986; Ge, Conger, & Elder, 2001). Pubertal transition, accelerated pubertal growth, and psychosocial factors, such as more recent stressful life events, have been found to increase early adolescent vulnerability to depressive symptoms (Ge et al., 2001; Ge et al., 2003). Females who matured the earliest were noted to have the highest rate of depressive symptoms, and the significant gender differences that emerged in early adolescence (i.e., ages 13-14) persisted through late-adolescence (Ge et al., 2001). On the contrary, males are more commonly reported to have externalizing behavior problems such as Conduct Disorder and Oppositional Defiant Disorder; however, rates of Oppositional Defiant Disorder are nearly equal among females and males following puberty (American Psychiatric Association, 2000).

Existing literature also suggests that symptom presentation may change over the course of development, such that it is difficult to ascertain whether the type and prevalence of

problem behavior varies significantly by gender (e.g., Mash & Dozois, 2003, Achenbach, 1991). For instance, the symptom profile for early adolescents on the Child Behavior Checklist (CBCL) indicated that clinically referred girls scored the highest on Internalizing symptoms, followed by clinically referred boys, non-referred girls, and non-referred boys. The opposite was observed on the Externalizing scale where clinically referred boys scored the highest, followed by clinically referred girls, non-referred boys, and non-referred girls (Achenbach, 1991). Thus, while gender differences in symptom presentation were apparent within clinically referred samples, only moderate differences in externalizing and internalizing symptoms by gender were observed among nonreferred youth.

Summary of Research Findings

The astounding number of children and adolescents experiencing mental health problems, particularly those in poverty, emphasizes the need for interventions that effectively reduce the symptoms of psychological distress many youth in poverty experience. Research documents a substantial percentage of youth who meet diagnostic criteria for internalizing and externalizing disorders, and experience impairments resulting from both clinical and subclinical symptoms (e.g., Hammen & Rudolph, 2003; Report of the Surgeon General, 2001). Symptoms of psychological distress have been found to exert a pervasive influence over many domains and years of one's life; findings that underscore the importance of intervening early to promote positive socioemotional development and reduce the likelihood children and adolescents will experience such difficulties.

Extant research indicates that poverty reduces the physical and affective quality of the care-giving environment, illustrating how distal settings and processes influence proximal environments and variables. Proximal processes operating within the home have been found

to mediate the effects of poverty on adolescents' psychological distress. Studies indicate that economic hardship (i.e., poverty, unemployment) adversely affects caregivers' psychological functioning, which in turn leads to increased harsh and punitive parenting. The disrupted caregiver-child relationship predicts poor child adjustment, as evidenced by increased internalizing and externalizing symptoms (Conger et al., 1992; Conger et al., 2002; McLoyd et al., 1994). Although a number of studies examine the pathways through which poverty adversely impacts child and adolescent mental health, and in doing so emphasize the significance of the home environment, there is a shortage of literature documenting interventions that may reduce adolescent maladjustment within the context of less optimal affective quality home environments.

The investigators behind the previously reviewed early educational interventions demonstrated the benefits associated with intervening early to promote positive cognitive development and academic achievement for children growing up in high-risk, impoverished environments. However, there is a shortage of literature documenting the benefits of early educational programs on participants' mental health outcomes. The design of the Abecedarian and CARE programs, which allowed responsive, supportive, and caring relationships to develop between caregivers and the children receiving the early educational center-based child care would suggest that program participation may have positively influenced early adolescent mental health. Given the significant number of children in poverty who experience symptoms of psychological distress, and the numerous young children who receive early education services annually (i.e., Head Start), further examination of the benefits high-quality, comprehensive child care services may have on mental health outcomes would be beneficial. Consequently, this study evaluated whether early educational

intervention is associated with fewer internalizing and externalizing symptoms of psychological distress in early adolescence.

The significance of examining both internalizing and externalizing symptoms of psychological distress is supported by research indicating that youth growing up in impoverished environments, such as those included within the present sample, are at a heightened risk for depression, anxiety, and disruptive behavior problems (e.g., Buckner & Bassuk, 1997; McLoyd, 1990). Further, by examining a range of symptoms one may better ensure that the influences of early educational intervention and the affective quality of the home environment on early adolescent mental health are thoroughly captured. Complicating the examination of internalizing and externalizing problems in isolation of one another are difficulties associated with symptom classification. The symptoms underlying psychiatric disorders, and the nature in which symptoms manifest tends to be fluid (Kim et al., 2003; Mash & Dozois, 2003). For instance, feelings of depression, such as intense sadness and irritability may initially be manifest through withdrawal and increased sleep; however, later in the course of depression, or among other individuals, such depressive feelings may be observed through acting-out and aggressive behaviors. Further, potential gender differences in the presentation of psychological disorders also warrants study of both internalizing and externalizing symptoms (e.g., Achenbach, 1991; Petersen et al., 1993). Given the fact that dissimilar rates of internalizing and externalizing symptoms have been reported by gender in extant research, symptoms were examined by gender in this study's preliminary analyses.

As individuals develop, their abstraction, reflection and awareness increase, such that thought is more fully developed in adolescence than in childhood (Guo, 1998). Adolescents may consequently have a heightened awareness of the adversity associated with poverty, be

more sensitive to the dynamics in relationships, and may also be more likely to internalize and react to a strained parent-child relationship and the affective quality of the home. Adolescents in poverty may be particularly sensitive to the emotional climate of their home environment, which may increase their risk for poor mental health outcomes. It has been suggested that the framework for development is built early on and that these early characteristics (e.g., relationships, personal strengths, experiences) influence later outcomes for youth (Gottlieb, 1997; NICHD Early Child care Research Network, 2006). Existing studies indicate that parenting quality in childhood, early attachment relationships, and childhood IQ may positively influence later socioemotional outcomes for youth confronted with adversity (e.g., Masten et al., 1999; NICHD Early Child care Research Network, 2006). However, it remains to be seen whether similar findings may be observed with the affective quality of the early childhood home. Specifically, whether a high affective quality early childhood home environment may buffer early adolescents from the effects of a less optimal early adolescent home environment on poor mental health outcomes.

Research Hypotheses

The specific hypotheses guiding this project were as follows:

1. Several early educational child care programs have served young children and families from impoverished environments, cognizant of the ways in which poverty adversely affects many domains of life. The findings reviewed above, combined with the programs' designs and the theoretical framework supporting these studies, would suggest that early educational interventions may have positive effects on child and adolescent mental health. Consistent with the ecological theory and extant literature documenting poverty's influences upon developmental outcomes, **I hypothesized that early educational intervention and a more positive (i.e., higher affective quality) early home environment would be associated with fewer internalizing and externalizing symptoms in early adolescence.**

2. The ecological theory posits that environments in which children spend a significant amount of time, such as the child care setting, are likely to significantly influence child development. Supportive and responsive microsystems, such as high-quality child care environments, may protect children against adversity in other microsystems. **Consequently, I hypothesized that early educational intervention would moderate the effects of the affective quality of the early home environment on internalizing and externalizing symptoms in early adolescence, such that program participants would be buffered against a poor quality early home environment.**

3. To date, the timing of the affective quality of the home environment on early adolescent mental health has not been examined. Extant research has generally studied restricted developmental stages (e.g., either childhood or adolescence), and has not examined the proximal processes that are affected by poverty (i.e., parenting, emotional climate of the home environment) throughout development. The nature in which poverty influences proximal factors, such as the affective and emotional climate of the home at various developmental stages, is an area in need of greater study. Within the present study the timing of the emotional climate of the home will be examined with regards to its impact on early adolescent externalizing and internalizing symptoms. Literature suggests that early experiences create a foundation for later experiences, and that such early experiences are likely to continue to impact the individual over development (e.g., Gottlieb, 1997; NICHD Early Child care Research Network, 2006; Belsky & Fearon, 2002). For example, positive early experiences may protect youth when they encounter adversity later in their environments and relationships (e.g., Masten et al., 1999). **Consequently, I hypothesized that the affective quality of the early childhood home environment would moderate the impact of the early adolescent home environment on early adolescent mental health. I expected that a positive early childhood home environment would buffer individuals from the effects of a negative early adolescent home environment, such that individuals with higher quality early home environments would experience fewer symptoms of externalizing and internalizing disorders in early adolescence.**

CHAPER II:

METHODS

Participants

The Abecedarian Project and Project CARE recruited participants as infants from community hospitals and agencies within the academic community in which the child care facility was located. Only healthy infants were eligible to participate in both studies, such that infants with biological disorders, severe health conditions, and signs of developmental delay were excluded from participation (Campbell et al., 2001). Additionally, only families that resided within commuting distance of the child-care facility and qualified based upon elevated sociodemographic risk were enrolled in these studies. Individuals scoring 11 or above out of a total score of 13 on the High Risk Index were judged to be at environmental risk for poor academic and cognitive outcomes and were considered for program eligibility (Ramey & Smith, 1977). The High Risk Index assessed characteristics such as maternal and paternal education levels, maternal IQ, family income, and school failure in parents and siblings.

Abecedarian's sample at time of enrollment consisted of 111 babies born to 109 families (59 girls and 52 boys). Project CARE was developed shortly after the Abecedarian Project, in part, due to the later program's impressive early childhood findings. CARE recruited a smaller sample of 62 infants believed to be at increased risk for developmental delays due to the family's disadvantaged social or educational circumstances (Wasik et al., 1990). The majority of the mothers enrolled in both the Abecedarian and CARE studies had

less than a high school education, were single parents, and approximately one-third were teenage mothers (see Table 1). While ethnicity was not a factor for inclusion, 98% of the Abecedarian sample, and 92% of the Project CARE sample was African-American.

Table 1

Abecedarian and CARE Family Demographics Upon Study Entry

| Family Characteristic | % | Mean | Standard Deviation |
|--------------------------|----|------|--------------------|
| Maternal Age (years) | | 20.3 | 4.8 |
| Maternal Education | | | |
| Less than High School | 62 | | |
| High School Graduate | 33 | | |
| Greater than High School | 5 | | |
| Maternal IQ | | 84.5 | 10.2 |
| Marital Status | | | |
| Married | 19 | | |
| Single | 75 | | |
| Divorced/Separated | 6 | | |

Design

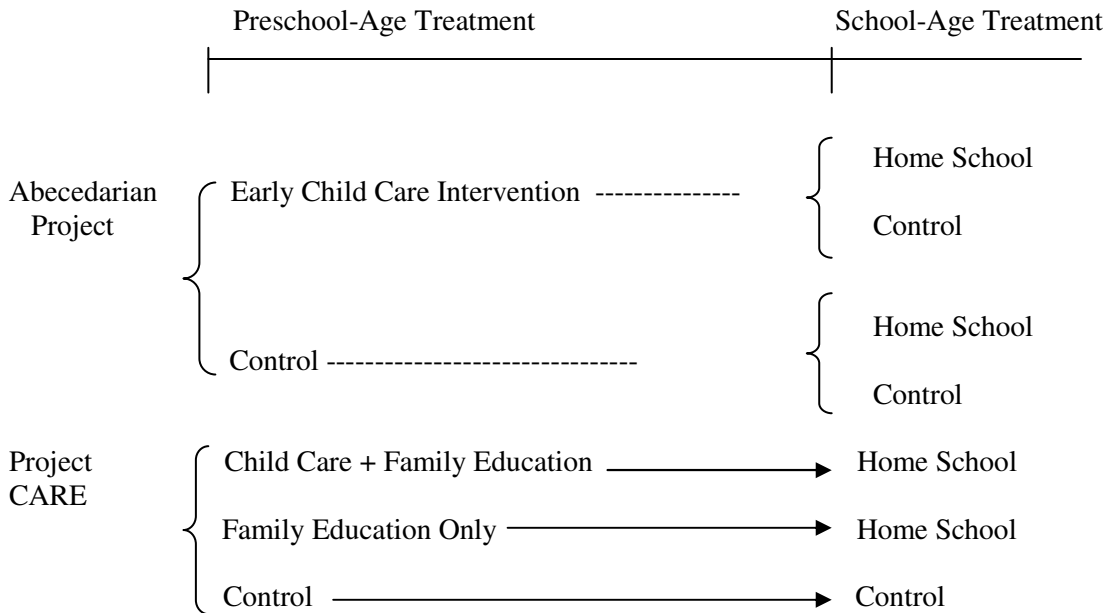
Abecedarian and CARE Program Designs

The Abecedarian and CARE projects were two distinct, consecutive early childhood programs designed to promote healthy development for children at high risk for poor developmental outcomes. Available space and staff influenced the number of children able to receive center-based care at any one time. Abecedarian participants were recruited over a period of 5 years (1972-1977), creating a total of 4 cohorts, while CARE participants were recruited between 1978 and 1980, comprising a total of 2 cohorts (Burchinal, Campbell, Bryant, Wasik, & Ramey, 1997). Both programs recruited participants in early infancy (during the first three months of life), randomly assigning infants and families to treatment and control groups.

In the Abecedarian study, infants were randomly assigned to either the child care treatment group or the control group. When the Abecedarian children began kindergarten, each child, regardless of their preschool assignment (treated vs. untreated) was re-randomized for the school-age intervention. Thus, the Abecedarian study is comprised of a total of four groups: 1) preschool treatment group, 2) preschool control group, 3) preschool treatment plus school-age control group, and the 4) preschool control plus school-age treatment group. Infants in the CARE study were randomly assigned to one of three groups: 1) a child care treatment/family education plus school-age treatment group, 2) a family education plus school-age treatment group, 3) and a control group. Therefore, as noted, all children in the child care treatment plus family education group and all those in the family education only group received the school-age intervention upon school entry (see Figure 2).

Figure 2

Abecedarian and CARE Program Design



Child Care Treatment. Despite the fact that the Abecedarian Project and Project CARE were two different early educational child care programs, both the samples of participants they served, and the interventions they provided were highly similar. Abecedarian participants randomly assigned to the preschool treatment group received year-round full-time educational child care from infancy to Kindergarten entry, and their primary medical care at the center’s child care facility, as did infants randomly assigned to receive the early child care program in Project CARE. The high quality center-based care, provided in both early intervention studies, supplied children with a stable, contingently responsive, stimulating environment designed to promote healthy developmental outcomes. An integral component of these early educational programs was the pre-school curriculum. The Learninggames curriculum was utilized from infancy until school age and promoted cognitive,

language, adaptive behavior, and socioemotional development (Sparling & Lewis, 1979; 1984).

Family Education. While both Abecedarian and CARE included intensive center-based educational programming, CARE added an additional intervention that introduced the Learninggames curriculum to families through home visits. Participants randomly assigned to the Child Development Center plus Family Education group received the high-quality center-based child care previously described, in addition to family education provided through home visiting services. The Family Education group received solely the family education intervention (Wasik et al., 1990).

Home visitors strove to actively involve parents in their child's education through the use of the Learninggames curriculum, and ultimately influence positive child development and the early home environment. Home visitors were instructed in how to help parents deal more effectively with everyday stressors through the use of problem-solving approaches, they provided support and encouragement to families, served as a model for positive parent-child interactions, and facilitated the family's ability to navigate community agencies and resources. The majority of home visits were delivered to the child's mother; each visit tended to last between 30 and 60 minutes (Wasik et al., 1990).

School Age Intervention. The Abecedarian Project and Project CARE included a school-age component that followed the preschool interventions. Abecedarian participants were re-randomized following the preschool intervention to receive a home school resource teacher for the first 3 years of elementary school or were assigned to the school-age control group. All children who received early intervention services in Project CARE (Child Care

plus Family Education or Family Education only groups) were assigned a home school resource teacher in the first 3 years of elementary school (Burchinal et al., 1997).

Intervention services provided to participants during the school-age component encouraged parents to become more involved in their child's education, and strove to narrow education gaps between the child's home and school. Home school resource teachers created individualized educational activities for each participating child. Activities targeted the child's current academic needs as identified by their classroom teacher and later addressed in the home between the family and child (Burchinal et al., 1997).

Control. Many families assigned to the control group for both studies independently sought out a variety of early care environments typically utilized by low-income families in the community, such as home-based care or other local child care centers (Campbell et al., 2001; Campbell et al., 2002). Although participants in the control groups for both early childhood programs did not receive the center-based early educational child care, nor the family education intervention, they were provided some special assistance. For instance, both the Abecedarian and CARE control group participants were provided diapers and nutritional supplements during the first 15 months of life. Additionally, in times of need a social worker provided crisis intervention services to any participant, regardless of group assignment.

Participants in Present Study Sample

Given the present study's focus on the early care environment, two groups were identified for this study's data analyses: 1) Child Care Treatment group: all those in the Abecedarian child care treatments (including both those who did and did not receive the school-age intervention) plus all participants in the CARE sample who received the child care plus family education component and the school-age intervention; 2) Control group: all

those in the Abecedarian study who did not receive the child care intervention (including both those who did and did not receive the school-age intervention) plus all those in the control group from CARE. Therefore, the treated group within the present study includes Abecedarian and CARE participants who received the early educational child care intervention, and the control group is comprised of individuals in both studies who received neither the child care treatment nor the family education intervention (see Table 2). The present study emphasizes the early care environment (infancy to school-age); therefore, the school-age treatment which followed the preschool phase of both programs was not examined in this study. It is the early care environment that was the focus of this study, given the fact that previous research has suggested that high-quality early child care settings (e.g., low caregiver-child ratios, supportive and responsive interactions) may positively influence children's socioemotional outcomes (see review by Vandell, 2004).

To allow for comparisons between individuals who received similar early educational child care experiences with those who did not receive the early educational center-based programs, CARE's Family Education only group was excluded from the present study's analyses. In addition to the fact that the Family Education only group did not receive the center-based educational child care, prior analyses have shown that this intervention did not successfully influence child and parent behavior (Wasik et al., 1990). Previous results suggested that family education delivered via home visiting did not significantly affect children's cognitive development, and neither parents' attitudes, nor the home environment were altered by this family education treatment.

Table 2

Abecedarian and CARE Participants at Early Adolescent Follow-up

| | Abecedarian | CARE | Combined Sample |
|---|--------------------|-------------|------------------------|
| Child Care Treatment (with or without family education or school age treatment) | 50 | 14 | 64 |
| Preschool Control (with or without school age treatment) | 49 | 22 | 71 |
| Total | 99 | 36 | 135 |

The present study contains a total of 135 early adolescents from the Abecedarian Project and Project CARE; 64 of whom received the child care treatment, and 71 of whom did not receive the early educational child care (nor the family education component) and thus comprise the control group. The total study sample, as well as each treatment group (Child Care Treatment and Preschool Control) within this study, is comprised of an approximately equal number of males and females (see Table 3). A total of 70 males are included within the present study (36 in the Control group, 34 in Child Care Treatment), and 65 females (35 in the Control, and 30 in the Child Care Treatment). Attrition within this study sample was a result of participants who were deceased, living overseas during the age-12 follow-up, withdrawn from the study in early infancy, or missing data required for the analyses conducted in the present study. Participants missing outcome data were eliminated from this database (8 individuals); similarly, those missing data on predictors necessary to run data analyses were also deleted from this data set (2 individuals). Attrition occurred at

approximately equal rates within both the Control and Treatment groups, as well as within the CARE and Abecedarian projects.

Table 3

Gender of Participants in Study by Treatment Group

| | Child Care Treatment | Control | Total Sample |
|----------------|---------------------------------|----------------|---------------------|
| Males | 34 | 36 | 70 |
| Females | 30 | 35 | 65 |

Procedures

The present study utilizes data collected during the preschool phase of the Abecedarian and CARE studies, as well as data gathered during the early adolescent (age 12) follow-up studies conducted at the Frank Porter Graham Child Development Institute at the University of North Carolina at Chapel Hill. Participants in both early educational programs were recruited as infants from community agencies and hospitals within the community the child care center was located. During the preschool phase of the studies, participants were randomly assigned to treated or control groups. Information pertaining to the early childhood home was collected on participants when they were approximately 6, 18, 30, 42 and 54 months of age; home visits were conducted to obtain this information with the use of the age appropriate versions of the Home Observation for the Measurement of the Environment (HOME). To participate in the early adolescent follow-up participants in the Abecedarian and CARE studies were contacted by letter, telephone call or home visit. The Family Environment Scale (FES) was completed by early adolescent participants during age 12 follow-up studies. Scores on the Internalizing and Externalizing symptom scales of the Child

Behavior Checklist (CBCL) were also obtained during the early adolescent follow-up studies; parents or primary caregivers served as the respondents for this measure of child and adolescent psychopathology.

Measures

Affective Quality of the Early Home Environment

The quality of the early home environment was measured through the use of the Home Observation for the Measurement of the Environment (HOME); data were collected through home visits when children were approximately 6, 18, 30, 42 and 54 months of age. Research assistants used the age-appropriate version of the HOME to collect data regarding the cognitive stimulation provided in the home and the quality of the physical home environment, such as the toys and educational resources available. The emotional climate of the family and affective quality of the home were also measured through observations of parent (mother)/child interactions in the home (Caldwell & Bradley, 1984; Bradley, Caldwell, Rock, Hamrick, & Harris, 1988). The infant/toddler version was used to gather data on children younger than 3, and the preschool scale was used for children ages 3-6.

Each version of the HOME varies slightly with respect to the total number of items contained. The Infant/Toddler HOME scale contains 45 items divided amongst six subscales: Responsivity of Mother; Avoidance of Restriction and Punishment; Organization of the Environment; Appropriate Play Materials; Maternal Involvement; and Variety of Daily Stimulation (Bradley & Caldwell, 1975). Answers to items on the Infant/Toddler and Preschool Scales are obtained primarily through home observations; for instance, the home visitor/research assistant observed that the “mother converses with child at least twice during the visit.” The Preschool Scale contains 55 items clustered into eight subscales: Stimulation

through Toys, Games, and Reading Materials; Positive Social Responsiveness; Physical Environment; Pride, Affection and Warmth; Stimulation of Academic Behavior; Modeling and Encouraging of Social Maturity; Variety of Stimulation; and Physical Punishment (Bradley & Caldwell, 1975). Answers to items on the Preschool HOME, consistent with those on the Infant/Toddler Scale, are obtained through home observations of mother-child interactions and through interviewing the mother/caregiver.

Statistical findings indicate that the HOME is a reliable and valid measure. Caldwell and Bradley (1979) report an internal consistency of reliability of .89 for the infant-toddler version, and .93 for the preschool version (Bradley et al., 1988). The norming samples for each version have been mixed with respect to race; the majority of the samples were comprised of Caucasian and African-American individuals (Bradley et al., 1988; Caldwell & Bradley, 1984).

Individual sub-scales from the HOME have been selected in prior studies to reflect variables of interest and to ensure that the selected measures are consistent with the theoretical framework supporting such studies. For example, Bradley et al., (2001) eliminated items from the HOME which were considered indicators of children's behavior (i.e., "How often does your child read for enjoyment?") so as to retain only items in their analyses which were conceptually meaningful to their study of the home environment. In a study of poverty, parenting, and children's mental health, McLeod and Shanahan (1993) selected items from the Emotional Responsiveness and Use of Physical Punishment subscales to measure the quality of mothers' interactions with their children, thereby eliminating scales which measure the physical and cognitive stimulation provided in the home. Similarly, Ramey and Farran (1981) utilized the Maternal Warmth and Verbal

Responsivity, Absence of Restriction and Punishment, and Maternal Involvement subscales in their study of “functional maternal concern.”

Early Affective HOME. Consistent with previous research, the subscales selected from the HOME for analyses in the present study were those that are most consistent with the theoretical framework on which this study is grounded. Given this study’s emphasis on the affective and emotional quality of the home environment, subscales that are theoretically consistent with this study’s focus were selected from the versions of the Infant/Toddler and Preschool HOME scales used in the Abecedarian and CARE studies. Specifically, items from the Emotional and Verbal Responsivity of Mother, and Avoidance of Restriction and Punishment subscales from the Infant/Toddler HOME, and those included within the Pride, Affection and Warmth and the Physical Punishment subscales from the Preschool HOME were used in the present study. The noted subscales assess the same constructs in early childhood (e.g., similar items on each scale asked in age-appropriate contexts); specifically, the selected subscales assess the affective quality of the early home. Given this study’s relatively small sample size it was important to have as few predictors as possible to maximize the likelihood analyses would detect significant differences. Thus, responses on items included within the 4 noted subscales were standardized and averaged across time (6, 18, 30, 42 and 54 months) to create one predictor (Early Affective HOME) for the affective quality of the early home environment for each participant. The majority of participants in this study sample had data from all possible data points; however, 12 participants were missing data from one data point, and 7 individuals were missing data from 2 or more data points. All individuals for whom data on at least one time point was available are included in this study sample.

Affective Quality of the Adolescent Home Environment

The Cohesion and Conflict subscales of the Family Environment Scale (FES), as completed by adolescent participants in the Abecedarian and CARE studies, served as the measure of the affective quality of the early adolescent home environment in the present study. During the early adolescent (age 12) follow-up, early adolescents and parents of the Abecedarian and CARE projects completed the FES; a measure designed to assess the affective quality of the home environment. The FES is designed to obtain information regarding the social climate of the family, interpersonal relationships, the basic organizational structure of the family, and the nature in which families foster personal growth (Moos & Moos, 1981). Abecedarian and CARE participants completed Form R of the FES, which is comprised of 90-items rated true or false. The scale does not result in a total score or composite score that reflects an individual's overall familial environment, rather items are divided into 10 subscales that comprise 3 underlying dimensions. The Cohesion, Expressiveness, and Conflict subscales comprise the Relationship dimension; a dimension that assesses the degree to which family members feel a sense of belonging and pride concerning their family, "the extent to which there is open expression within the family and the degree to which conflictual interactions are characteristic of the family" (p. 5, 1981). The Personal Growth dimension measures the emphasis families place on fostering various developmental processes, strengths, or involvement in certain activities, and is comprised of the following subscales: Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active Recreational Orientation, and Moral-Religious Emphasis. The System Maintenance Dimension examines the family's structure, such as hierarchical organization,

adherence to family rules, and the degree of control family members may impress upon one another.

The Family Environment Scale is a valid and reliable instrument for measuring the affective quality of the home and the familial social climate. The normative sample for the FES included both “normal” and “distressed” families, a range of family structures (i.e., single parent, four member families), and families from various racial groups (Moos & Moos, 1981; Moos & Moos, 1994). Moos and Moos (1981) report average subscale correlations around .20, indicating that subscales measure “distinct though somewhat related aspects of family social environments” (p. 7). Test-retest reliabilities for subscales are acceptable, ranging from .68 to .86, and the internal consistencies for subscales lie in the acceptable range, from .61 to .78. The construct validity for FES subscales has also been supported by previous studies. For example, scales on the FES were found to be positively related to scales on measures assessing similar constructs, such as the Procidano-Heller indices of perceived support from family and friends (Moos & Moos, 1994).

Conflict and Cohesion. The Cohesion and Conflict subscales from the FES were selected to maintain theoretical consistency with the goals of the present study. These subscales, like those selected from the HOME, assess the affective quality of the home environment and have sufficient psychometric support. The alpha levels for the Cohesion and Conflict subscales are .78 and .75, respectively (Moos & Moos, 1981, 1994). Due to the fact that the FES does not yield a total score or dimension scores, individual subscales included within the FES are commonly selected by researchers in accordance with the goals of the particular study. For instance, to examine the perceived scholastic competence and global self-worth of adolescents enrolled in the Abecedarian Project, researchers selected the

Cohesion and Conflict subscales from the FES (Campbell, Pungello, & Miller-Johnson, 2002). Given the fact that the Cohesion and Conflict subscales have the greatest theoretical and psychometric support with respect to the goals of the present study, and are most theoretically consistent with the subscales selected from the HOME, the Conflict and Cohesion subscales from the FES served as the measure of the early adolescent home environment in the present study.

From a theoretical standpoint, the early adolescent's perspectives may be most valuable to understanding the nature in which early adolescent psychological well-being is impacted by the emotional climate of the home in economically disadvantaged families. Research examining adolescents' perceptions of familial financial difficulties suggests that in addition to the indirect effect economic stress has on the adolescent through its impact on the caregiver and thus the caregiver-child relationship, adolescents' perceptions of their family's financial difficulties play an integral, and direct role in the link between financial hardship and adolescent mental health (McLoyd et al. 1994). For instance, researchers have found that adolescents' perceptions of family financial problems, economic difficulties which were so disruptive as to adversely influence parents mental health and family relationships, deteriorated adolescents sense of personal control or mastery, and increased the likelihood adolescents experienced anxiety, depression, and low self-esteem (Conger et al., 1999; McLoyd et al., 1994). Similarly, in a study regarding marital conflict and adolescent adjustment, investigators found that adolescents perceptions of marital and parent-child conflict played an integral role in later adolescent well-being (Harold, Fincham, Osborne, & Conger, 1997). Specifically, "adolescents appraisals of marital conflict and parent-child hostility mediated the impact of actual interparental hostility and parent-child relations" on

later symptoms of anxiety and depression (p. 348). Given the significance of adolescent perceptions of familial conditions and interactions, the present study utilized the adolescent's ratings of the levels of cohesion and conflict that characterize their family.

Early Adolescent Mental Health

The Child Behavior Checklist was selected as the outcome measure in the present study due to its well-founded psychometric support, extensive use in both research and practice, and the fact that it measures youth symptomatology. Specifically, symptoms characteristic of various internalizing and externalizing disorders are assessed with this measure. The CBCL was selected as the measure of early adolescent mental health in the present study, in part, because it assesses for the presence of psychological distress among youth. This emphasis on pathology is consistent with the medical model driving much of the research and practice in the field of psychology (Gable & Haidt, 2005; Joseph & Linley, 2006). For several decades psychology has focused on distress, and consistent with the field of medicine, disease (Gable & Haidt, 2005). Thus, keeping with past and current trends predominant in psychology, the present study examined the presence of internalizing and externalizing symptoms of psychiatric disorders among early adolescents.

The Child Behavior Checklist (CBCL) is a widely used, empirically validated measure of child psychopathology for individuals ages four to eighteen (Achenbach, 1991). Parents, or primary caregivers, were the respondents for this measure; they were asked to think about the child's behavior in the preceding 6 months and circle 0 if the item is not true of the child, 1 if it is somewhat or sometimes true, and 2 if it is very true or often true. The CBCL is comprised of approximately 115 items divided amongst the following syndrome scales: Aggressive Behavior, Delinquent Behavior, Anxious/Depressed, Somatic

Complaints, Social Problems, Attention Problems, Thought Problems, and Withdrawn. T-scores are available for each of the syndrome scales, as well as for composites of Internalizing, Externalizing, and Total symptom scores. Due to the skewed raw score distributions, syndrome scales have means above 50 and standard deviations below 10 (Achenbach, 1991). Scores participants earned on the Internalizing and Externalizing Symptom scales in early adolescence provide the measure of early adolescent mental health in the present study. Internalizing and Externalizing symptom scales are designed to represent contrasting psychological problems; however, scales are not mutually exclusive (Achenbach, 1991). An individual's profile on the Internalizing symptom scale of the CBCL tends to be positively correlated with his or her scores on the Externalizing scale.

The CBCL is part of a comprehensive, multi-informant measurement system that includes self-report and teacher-report measures of child psychopathology (Achenbach, 1991). This system is backed by extensive research findings that support its validity and reliability (Achenbach, 1991; Kamphaus & Frick, 1996). The test-retest reliability over a 7-day period was noted to be .89 for CBCL syndrome scales, .90 for the composite of Internalizing problems, and .91 for the Externalizing composite. Median internal consistency coefficients for syndrome scales have been reported to be .76 and .92 for composite scales. Statistical analyses have also supported the measure's construct and criterion related validity, as well as the CBCL's content validity through its ability to discriminate between referred and non-referred individuals. The CBCL provides gender and age norms that allow for comparisons between the individual child and normative group with respect to age and sex. The CBCL was normed upon a large national sample of children and adolescents ages 4

through 18; factors such as age, gender, SES, and ethnicity were controlled for in the norming sample so as to match U.S. Census statistics (Kamphaus & Frick, 1996).

Table 4

Constructs Measured in Study by Instrument

| Construct | Instrument | Scales | Informant |
|--|---|---|------------------|
| Affective Quality of the Early Home Environment | Home Observation for the Measurement of the Environment | Emotional and Verbal Responsivity of Mother Avoidance of Restriction and Punishment Pride, Affection, and Warmth Physical Punishment | Home Observer |
| Affective Quality of the Adolescent Home Environment | Family Environment Scale | Cohesion Conflict | Early Adolescent |
| Early Adolescent Mental Health | Child Behavior Checklist | Internalizing Symptoms Composite Externalizing Symptoms Composite | Parent |

CHAPTER III:

RESULTS

In the sections that follow, preliminary analyses will first be discussed, followed by descriptive analyses, then findings related to each research question. All data were analyzed with SPSS 14.0. The analyses examined the early educational child care treatment (Treatment Group), the affective and emotional climate of the early childhood home environment (Early Affective HOME), and the affective quality of the early adolescent home environment (Conflict and Cohesion) as predictors of early adolescent mental health (Internalizing and Externalizing Symptoms) within this study's high-risk, longitudinal sample.

Preliminary Analyses

For the preliminary analyses, the database was first screened for missing data and examined for accuracy to ensure that participants' scores were entered correctly. As previously noted in the Methods section, participants without early adolescent mental health data and those without any data on the early home environment were dropped from the analysis dataset. A correlation analysis for the study's predictor and outcome variables was conducted and results are displayed in Table 5. Results indicated that the correlation between familial Conflict and Cohesion in early adolescence was significant, $r(133) = -.463, p < .01$, as was the correlation between adolescents mental health scores on the Externalizing and Internalizing Symptom Composite scales of the CBCL, $r(133) = .763, p < .01$.

Table 5

Bivariate Correlations Among Predictor and Outcome Variables

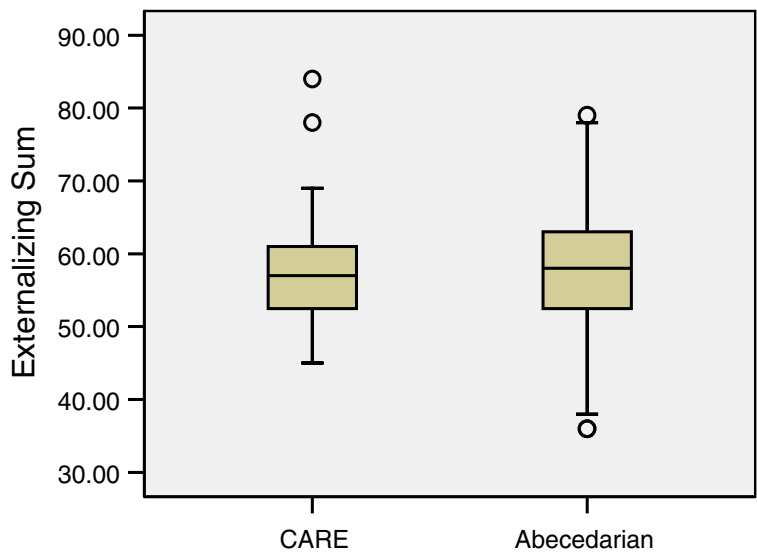
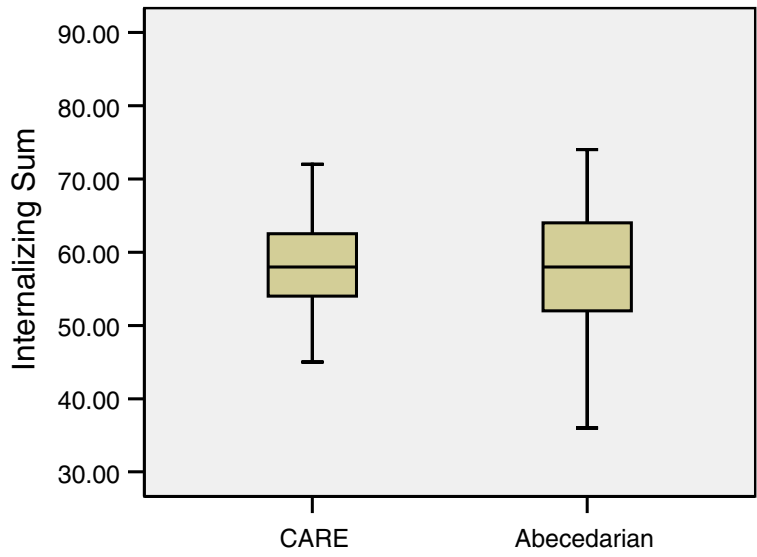
| Construct | Variable | 1 | 2 | 3 | 4 | 5 |
|--------------------------------|-------------------------|------|-------|---------|-------|--------|
| Early Childhood HOME | 1. Early Affective HOME | ---- | -.165 | .103 | -.108 | -.002 |
| | 2. Conflict | | ---- | -.463** | .084 | .085 |
| Early Adolescent HOME | 3. Cohesion | | | ---- | .078 | -.165 |
| | 4. Internalizing Sum | | | | ---- | .763** |
| Early Adolescent Mental Health | 5. Externalizing Sum | | | | | ---- |

** $p < .01$

To determine whether participants' scores on outcome variables (Externalizing and Internalizing Symptom Composites on the CBCL) differed significantly by study (Abecedarian and CARE), participants' scores were examined and analyses computed to discern whether differences in outcomes were significant. The means, standard deviations, ranges, and normality (i.e., skewness, kurtosis, frequency distributions) of participants' scores by study and outcome were examined and observed to be highly similar (see Figure 3). Independent-samples t -tests showed that there was not a significant difference in parent reported Externalizing Symptoms by study, $t(133) = .200, p = .84$, nor was there a statistically significant difference in parent reported Internalizing Symptoms by study, $t(133) = .722, p = .47$. Given the similarity between these two consecutive early intervention studies, data from both the Abecedarian Project and Project CARE were combined when the full prediction models were conducted, and a study variable (Abecedarian, CARE) was not included.

Figure 3

Distribution of Outcome Variables by Study



Similarly, to determine whether gender should be entered into prediction models the distributions of participants' scores by gender on the Externalizing and Internalizing Symptom Composite scales were examined. The distributions of participants' scores by outcome and gender were observed to be highly similar. Independent-Samples *t*- tests revealed that there were no significant differences between males and females scores on the Internalizing, $t(133) = 1.38, p = .17$, and Externalizing, $t(133) = -.43, p = .67$, symptom composite scales of the CBCL. Thus, gender was not included in the full prediction models.

Descriptive Analyses

The data were screened for normality by examining the means, standard deviations, extreme values, and outliers. An examination of descriptive statistics for outcome and predictor variables showed relatively normal distributions and few outliers. Histograms were examined to further assess the normality of the data set, the distribution of participants' scores by group, and within the total sample on the dependent variables. Boxplots and stem and leaf plots provided visual illustrations of those participants within the study sample with extreme values and outliers on all variables. There were few outliers in the dataset; outliers were not eliminated from the dataset and thus are included in all analyses.

Predictors by Treatment Group. The means and standard deviations of participants' scores by treatment group for each predictor variable are displayed in Table 6. On average, the treatment group was observed to have higher Early Affective HOME scores. The distribution of scores for control and treated participants on the Early Affective HOME were observed to be fairly symmetric, with the treated group showing a slightly skewed distribution due to a larger proportion of participants scoring above the group mean (see Figure 4). As noted in Table 6, treated participants' scores on the measure of the early

adolescent home environment reflected a higher affective quality environment than that of control group participants. Specifically, individuals randomly assigned to the child care treatment, on average, reported higher score on the Cohesion subscale of the FES in early adolescence and lower scores on the Conflict subscale of the FES. An examination of box plots indicated that participants in both the treatment and control group had fairly symmetric distributions on Cohesion and Conflict (see Figure 4). However, examination of box plots displayed slightly skewed distributions for Conflict. Many individuals endorsed lower levels of Conflict, and the number of participants reporting higher scores tapered at the higher end of the Conflict scale.

Figure 4
Distribution of Predictor Variables by Treatment Group

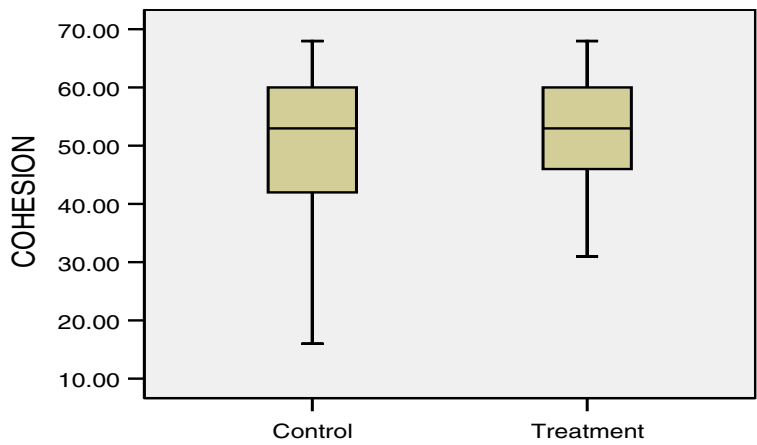
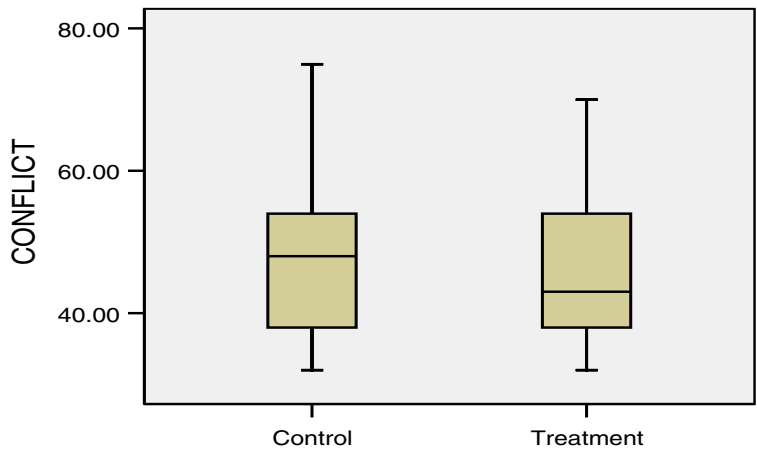
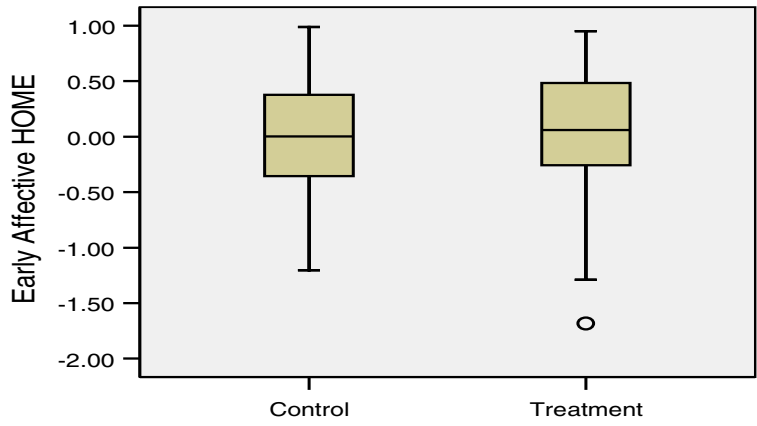


Table 6

Descriptive Statistics for Predictor Variables

| | Early Affective HOME | Early Adolescent Conflict | Early Adolescent Cohesion |
|-----------------|-------------------------|------------------------------|------------------------------|
| Treatment Group | | | |
| Treated | | | |
| M | .05 | 45.69 | 54.64 |
| SD | .53 | 9.75 | 10.23 |
| Control | | | |
| M | -.01 | 47.11 | 50.47 |
| SD | .50 | 10.87 | 14.72 |
| Study | | | |
| Abecedarian | | | |
| M | -.05 | 46.52 | 52.31 |
| SD | .52 | 10.27 | 12.80 |
| CARE | | | |
| M | .22 | 46.19 | 52.83 |
| SD | .47 | 10.68 | 13.41 |
| Gender | | | |
| Female | | | |
| M | .08 | 47.03 | 50.52 |
| SD | .52 | 11.22 | 14.01 |
| Male | | | |
| M | -.03 | 45.89 | 54.24 |
| SD | .50 | 9.51 | 11.63 |

Predictors by Study. As would be expected, Abecedarian and CARE participants displayed highly similar distributions across predictors; however, those in the CARE study, on average, were observed to have slightly higher Early Affective HOME scores. An examination of the means and distributions of predictors by gender indicates that scores on the Early Affective HOME, and scores on the Conflict and Cohesion subscales of the FES were highly similar for males and females (see Table 6). As observed in Table 6, females' scores on the Early Affective HOME were slightly higher than males; males, on average,

described their family as exhibiting lower levels of Conflict and higher levels of Cohesion in early adolescence than females.

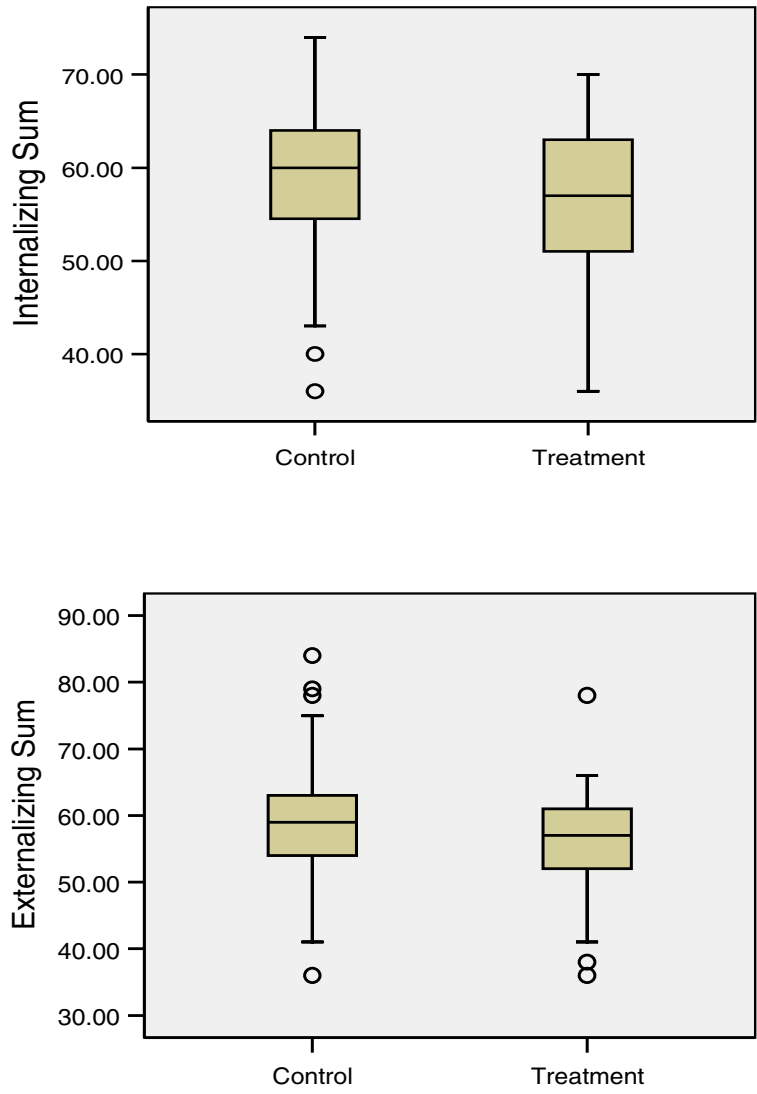
Outcome Variables. Descriptive statistics for this study's outcome variables (Internalizing and Externalizing Composite scores on the CBCL) were examined by treatment group, study and gender. Table 7 provides the means and standard deviations of Internalizing and Externalizing Symptom Composite scores on the CBCL by treatment group, study and gender. The distributions of Internalizing and Externalizing scores by treatment group were observed to be fairly symmetric (see Figure 5). On average, participants who received the child care treatment, compared to those randomly assigned to the control group, were rated lower on the Internalizing and Externalizing Symptom Composites of the CBCL.

Table 7
Descriptive Statistics for Outcome Variables

| | Internalizing Symptoms | Externalizing Symptoms |
|-----------------|---------------------------|---------------------------|
| Treatment Group | | |
| Treated | | |
| M | 56.47 | 56.28 |
| SD | 7.84 | 7.68 |
| Control | | |
| M | 58.77 | 58.72 |
| SD | 7.90 | 9.06 |
| Study | | |
| Abecedarian | | |
| M | 57.38 | 57.47 |
| SD | 8.39 | 8.72 |
| CARE | | |
| M | 58.50 | 57.81 |
| SD | 6.51 | 7.93 |
| Gender | | |
| Female | | |
| M | 56.71 | 57.89 |
| SD | 7.47 | 8.15 |
| Male | | |
| M | 58.59 | 57.26 |
| SD | 8.28 | 8.84 |

Figure 5

Distribution of Outcome Variables by Treatment Group



Analyses of Models Predicting to Mental Health Outcomes

General linear models (GLM) measured the extent to which treatment, the affective quality of the early childhood home, and the emotional climate of the early adolescent home environment impacted mental health outcomes in early adolescence. Univariate GLM was used to implement ANCOVA to evaluate each of the study's hypotheses. The assumptions of a one-way analysis of covariance (ANCOVA) were examined; the assumptions for analysis were met. Specifically, the normality of the population distributions for groups on the dependent variables were examined, as noted above in the Preliminary Analyses, and were not found to deviate from normality. Levene's Test of Equality of Error Variances confirmed that the homogeneity of variance assumption was met. Specifically, the variances of Internalizing and Externalizing symptoms for early adolescent participants were equal across treatment groups. Assumptions regarding the independence of the covariate (Early Affective HOME) from the intervention (Child Care Treatment), and the independence of dependent variable scores (Internalizing and Externalizing CBCL scores) from one another were met through this study's experimental design. The homogeneity of regression (parallel slopes assumption) was met. This test confirmed that the covariates had the same relationship with the dependent variables within the treatment groups examined in this study.

ANCOVA was deemed the most appropriate statistical procedure because it permits an examination of both main effects and interaction effects, and supports the use of continuous covariates. Thus, ANCOVA allows for an examination of the main effects of Treatment and the Early Affective HOME on mental health outcomes in early adolescence, and supports the interaction effect of a continuous covariate, Early Affective HOME scores, on early adolescent mental health.

Hypotheses 1 and 2

A one-way ANCOVA was conducted to evaluate Hypotheses 1 and 2. Both Hypotheses 1 and 2 were examined within the same prediction models, given that, as previously noted, ANCOVA allows for an examination of main effects (specified in hypothesis 1) and interaction effects (specified in hypothesis 2) within the same prediction model. Models were conducted separately for each outcome (i.e., Internalizing Symptoms and Externalizing Symptoms). Specifically, to examine Hypothesis 1, Treatment (child care treatment and control groups) and Early Affective HOME scores were entered first into the model predicting to Internalizing symptoms. The same main effects were then entered into the model predicting to Externalizing symptoms. Results indicated that no statistically significant differences for treatment group were found when predicting to Internalizing Symptoms [$F(1, 131) = 2.72, p = .10$] or Externalizing Symptoms [$F(1, 131) = 2.95, p = .08$] (see Tables 8 and 9). Additionally, no statistically significant differences were found for Early Affective HOME scores when predicting to Internalizing Symptoms [$F(1, 131) = 1.37, p = .24$] or Externalizing Symptoms [$F(1, 131) = .003, p = .96$]. Thus, Hypothesis 1 was not confirmed, as neither the main effects of Treatment, nor the Early Affective HOME were statistically significant when predicting to early adolescent Internalizing and Externalizing Symptoms.

The Treatment by Early Affective HOME interaction was then added to the model. This interaction was first entered into the ANCOVA model predicting to Internalizing Symptoms; a model was subsequently run with the interaction term predicting to Externalizing Symptoms. The interaction effect did not reach statistical significance when predicting to Internalizing Symptoms [$F(1, 131) = .21, p = .65$] or to Externalizing

Symptoms [$F(1,131) = 1.14, p = .29$] (see Tables 8 and 9). Due to the fact that the interaction term was non-significant when predicting to both outcomes, Hypothesis 2 was not confirmed.

Table 8

Internalizing Symptoms as a Function of Treatment and the Early Affective HOME

| <i>Source</i> | <i>SS</i> | <i>df</i> | <i>F</i> | <i>p</i> |
|---------------------------|-----------|-----------|----------|----------|
| Treatment Group (Tx) | 168.81 | 1 | 2.72 | .10 |
| Early Affective HOME (EH) | 85.24 | 1 | 1.37 | .24 |
| Tx * EH | 13.17 | 1 | .21 | .65 |
| Error | 8142.42 | 131 | | |
| Total | 457585 | 135 | | |

Table 9

Externalizing Symptoms as a Function of Treatment and the Early Affective HOME

| <i>Source</i> | <i>SS</i> | <i>df</i> | <i>F</i> | <i>p</i> |
|---------------------------|-----------|-----------|----------|----------|
| Treatment Group (Tx) | 211.16 | 1 | 2.95 | .08 |
| Early Affective HOME (EH) | .23 | 1 | .003 | .96 |
| Tx * EH | 81.33 | 1 | 1.14 | .29 |
| Error | 9373.68 | 131 | | |
| Total | 456977.00 | 135 | | |

Hypothesis 3

A one-way ANCOVA was also conducted to test the relationship between the early childhood and early adolescent home environment, and their impact on early adolescent mental health. Therefore the Early Affective HOME scores, and the FES scores for early adolescent Conflict and Cohesion were entered into the full models predicting to the continuous outcome variables. As noted above, the prediction models were conducted separately for each dependent variable (CBCL scores on the Internalizing and Externalizing Composite scales). The main effects of the early adolescent home on symptoms of internalizing and externalizing disorders in early adolescence were evaluated by entering participants' scores on the Conflict and Cohesion subscales into the models. No statistically significant main effects for Conflict [$F(1, 129) = .27, p = .60$] or Cohesion [$F(1, 129) = .23, p = .63$] were found when predicting to Internalizing symptoms. Similarly, main effects for Conflict and Cohesion did not reach statistical significance when entered into the model predicting to Externalizing symptoms, [$F(1, 129) = .03, p = .86$] for Conflict, and [$F(1, 129) = 2.76, p = .10$] for Cohesion (see Tables 10 and 11). Thus, the main effects of the affective quality of the early childhood and early adolescent home environment were non-significant when predicting to early adolescent symptoms of internalizing and externalizing psychiatric disorders.

To determine whether the emotional climate of the early childhood home environment may have moderated the impact of the affective quality of the early adolescent home environment on mental health outcomes in early adolescence, the interaction effect of Early Affective HOME by adolescent Conflict, and the interaction term Early Affective HOME by adolescent Cohesion were entered into the models. The Early Affective HOME by

Conflict interaction was not statistically significant when predicting to Internalizing symptoms [$F(1, 129) = 2.49, p = .12$], or to Externalizing symptoms [$F(1, 129) = 2.30, p = .13$]. Similarly, the interaction effect was non-significant for Early Affective HOME by Cohesion when this interaction term was entered into the models predicting to Internalizing symptoms [$F(1, 129) = .83, p = .36$], and Externalizing symptoms [$F(1, 129) = 1.47, p = .23$]. Thus, the hypothesized relationship between the affective quality of the early childhood home, and the affective quality of the early adolescent home environment was not confirmed.

Table 10

Internalizing Symptoms as a Function of the Affective Quality of the Adolescent Home

| <i>Source</i> | <i>SS</i> | <i>df</i> | <i>F</i> | <i>p</i> |
|---------------------------|-----------|-----------|----------|----------|
| Early Affective HOME (EH) | 159.05 | 1 | 2.53 | .11 |
| Conflict | 17.10 | 1 | .27 | .60 |
| Cohesion | 14.51 | 1 | .23 | .63 |
| EH * Conflict | 156.26 | 1 | 2.49 | .12 |
| EH * Cohesion | 52.10 | 1 | .83 | .36 |
| Error | 8111.29 | 129 | | |
| Total | 457585 | 135 | | |

Table 11

Externalizing Symptoms as a Function of the Affective Quality of the Adolescent Home

| <i>Source</i> | <i>SS</i> | <i>df</i> | <i>F</i> | <i>p</i> |
|---------------------------|-----------|-----------|----------|----------|
| Early Affective HOME (EH) | 171.78 | 1 | 2.41 | .12 |
| Conflict | 2.29 | 1 | .03 | .86 |
| Cohesion | 197.02 | 1 | 2.76 | .10 |
| EH * Conflict | 164.29 | 1 | 2.30 | .13 |
| EH * Cohesion | 105.03 | 1 | 1.47 | .23 |
| Error | 9205.84 | 129 | | |
| Total | 456977 | 135 | | |

Post-Hoc Analyses

The analyses examining whether early educational child care treatment was associated with fewer symptoms of internalizing and externalizing psychiatric disorders in early adolescence did not reach statistical significance. Due to the fact that this hypothesis was not supported, follow-up analyses were conducted to examine whether there was a relationship between treatment and borderline/clinical levels of internalizing and externalizing symptoms. An examination of stem-and-leaf plots revealed that a greater number of participants in the control group scored within the borderline or clinically significant range on the Internalizing and Externalizing Symptom scales of the CBCL than those in the treatment group. Scores falling within 67-70 on the CBCL are regarded as falling in the borderline clinical range, while scores above 70 lie in the clinically significant range (Achenbach, 1991). Given the group differences that were observed in preliminary analyses (i.e., plots and descriptive statistics), post-hoc chi-square analyses were computed to determine whether there were statistically significant differences in borderline/clinical levels of Internalizing and Externalizing Symptoms (CBCL scores of 67 and above) by treatment group.

Post-Hoc Chi-Square

Two chi-square analyses were conducted. One chi-square examined whether treatment group was associated with the dichotomous outcome (0 = sub-clinical symptoms, 1 = borderline/clinical symptoms) of borderline/clinical levels of Internalizing Symptoms. The other chi-square was conducted to assess whether treatment group was associated with the dichotomous outcome of borderline/clinical levels of Externalizing Symptoms. As shown in Table 12 a greater percentage of the control group (N = 11, 16%) scored in the borderline

or clinically significant range on the Internalizing Symptom scale of the CBCL, compared to the treatment group (N = 5, 8%). Similarly, a higher proportion of early adolescents in the control group (N = 12, 17%) than early adolescents in the treatment group (N = 1, 2%) scored in the borderline or clinical significant range for Externalizing Symptoms (Table 13). Chi-square analyses indicated that treatment group was significantly related to borderline/clinical levels of Externalizing Symptoms in early adolescence, Pearson χ^2 (1, N = 135) = 9.10, $p < .01$, but was not significantly related to borderline/clinical levels of Internalizing Symptoms, Pearson χ^2 (1, N = 135) = 1.90, $p = .17$ (see Tables 12 and 13). Thus, the percentage of participants in the control group who experienced Externalizing Symptoms falling in the borderline/clinical range was significantly greater than those in the treated group. While the Chi-Square analysis indicated that treatment groups differed significantly in terms of borderline/clinical levels of Externalizing Symptoms, group differences were non-significant for borderline/clinical levels of Internalizing Symptoms.

Table 12

Prevalence of Borderline/Clinical Internalizing Symptoms by Treatment Group

| | Treatment | | Control | | χ^2 | p-value |
|----------------------------|-----------|------|---------|------|----------|---------|
| | N | % | N | % | | |
| Borderline/Clinical | 5 | 7.8 | 11 | 15.5 | | |
| Sub-Clinical | 59 | 92.2 | 60 | 84.5 | 1.90 | .17 |

Table 13

Prevalence of Borderline/Clinical Externalizing Symptoms by Treatment Group

| | Treatment | | Control | | χ^2 | p-value |
|----------------------------|-----------|------|---------|------|----------|---------|
| | N | % | N | % | | |
| Borderline/Clinical | 1 | 1.6 | 12 | 16.9 | | |
| Sub-Clinical | 63 | 98.4 | 59 | 83.1 | 9.10 | <.001 |

CHAPTER IV:

DISCUSSION

The present study investigated whether participants who received the early educational child care intervention from early infancy to age 5 experienced fewer externalizing and internalizing symptoms as early adolescents. This study also examined whether a higher affective quality early home environment was associated with more positive mental health outcomes in early adolescence. Additionally, this study sought to evaluate whether treated participants were buffered against the effects of poorer quality early childhood home environments, reporting fewer symptoms of psychiatric disorders in early adolescence than individuals in the control group. The relationship between the affective quality of the early home environment, the affective quality of the early adolescent home environment, and early adolescent mental health outcomes was also investigated.

The results of statistical analyses did not support this study's hypotheses. Specifically, analyses did not support the hypothesized relationships between early educational intervention and the affective quality of the early home environment on early adolescent mental health outcomes. Additionally, the affective quality of the early childhood home environment was not found to moderate the influence of the emotional climate of the early adolescent home environment on early adolescent mental health. Although ANCOVA analyses indicated that the hypothesized relationship between treatment and early adolescent mental health outcomes was not statistically significant for overall levels of Internalizing and Externalizing symptoms, a post-hoc chi-square analysis indicated that those in the control

group experienced significantly more borderline and clinical levels of Externalizing symptoms than those in the treatment group. In the sections that follow each research question is discussed in order, and findings from each question are interpreted in relation to existing research. The study's limitations are then considered, and the chapter concludes with a discussion of this study's implications and directions for future research.

Impact of Treatment on Early Adolescent Mental Health

Individuals assigned to the early educational program were hypothesized to evidence fewer internalizing and externalizing symptoms of psychiatric illness in early adolescence than those assigned to the control group. Contrary to the hypothesized relationship, results from the statistical analyses indicated that differences between the treated and the control group on early adolescent symptoms of internalizing and externalizing psychiatric disorders did not reach statistical significance. The primary goal of the early educational treatment was to enhance the cognitive and academic functioning of children at high-risk for poor intellectual outcomes and educational achievement. Given the primary focus of the intervention, it is possible that this early educational child care treatment did not significantly influence early adolescent mental health outcomes. However, findings from this study are not consistent with research which suggests that high-quality child care, such as that examined within the present study, positively influences children's social and emotional development.

As noted in Chapter 1, research suggests that responsive and supportive high-quality child care impacts children's mental health, as evidenced by moderate decreases in children's internalizing and externalizing behavior problems (Votruba-Drzal, Coley, Chase-Lansdale, 2004; Vandell, 2004; Peisner-Feinberg et al., 2001). The research that produced these findings differed from the present study in terms of the developmental period during which

children were assessed. Specifically, the noted studies examined outcomes for children in the early and middle-childhood years, in contrast to the present study which examined the impact of high-quality early child care on mental health outcomes in early adolescence. This difference is significant given that the socioemotional benefits of quality child-care may diminish over time (Peisner-Feinberg et al., 2001). Thus, as the time between the intervention (i.e., early childhood) and assessment (i.e., early adolescence) increases, the benefits the intervention may have had on participants' mental health outcomes in the present study may have decreased such that statistically significant group differences were not observed in early adolescence.

A significant gap exists in the literature, as the Chicago Study is the only early educational program with published findings regarding the mental health outcomes of its adolescent participants. The results from the present study are inconsistent with those of the Chicago Study, which found that youth who received the early childhood intervention reported significantly fewer symptoms of depression in adolescence (Smokowski et al., 2004). The discrepant findings might, in part, be attributed to methodological differences between the Chicago Longitudinal Study and the present study. Specifically, a 3-item yes/no self-report questionnaire of depression served as the measure of adolescent mental health in the Chicago Study. Adolescents responded to dichotomous items regarding whether they "have felt really down about life in general," have felt "seriously depressed," and "have felt hopeless about the future" within the past year (Smokowski et al., 2004, p. 76). Individuals who responded "yes" to at least one of the three questions were judged to be at-risk for depression. Researchers from the Chicago Study recognized the inherent limitations their measure possessed, acknowledging that their "scale for adolescent depression had marginally

acceptable psychometrics” (p. 89). In contrast, parents of participants in the present study completed a 115-item psychometrically sound measure of youth psychopathology designed to measure symptoms of both internalizing and externalizing psychiatric disorders. The Internalizing Problems Scale of the CBCL includes 31 items designed to assess the somatic and physiological manifestations of anxiety and depression, as well as the behavioral (e.g., crying, lacking energy) and cognitive (e.g., feeling worthless) characteristics of depression. The noted methodological differences between these studies are likely to greatly account for the discrepant mental health findings, as the informants for the measure of adolescent mental health varied between studies, as did the psychometric properties of the instrument used to measure youth psychopathology.

Clinical Levels of Symptomatology

As noted, treatment groups in the present study were not found to differ significantly from one another in terms of overall levels of internalizing and externalizing symptoms. However, the results of the ANCOVA analysis testing the main effect of early educational child care on early adolescent mental health outcomes did approach statistical significance ($p = .10$ and $p = .08$ for Internalizing and Externalizing symptoms, respectively). The hypotheses guiding the present study and related statistical analyses examined overall levels of early adolescent psychopathology, without differentiating between clinical and sub-clinical levels of symptoms. As noted, the discrepant rates of Internalizing and Externalizing symptoms, by group assignment, falling in the borderline or clinically significant range on the CBCL suggested that early educational child care may have positively influenced the mental health of program participants. Thus, post-hoc analyses were conducted which confirmed that treatment groups differed significantly from one another on borderline and

clinically significant levels of Externalizing Symptoms. A significantly greater number of individuals in the control group experienced symptoms of externalizing psychiatric disorders falling in the borderline and clinically significant range.

The Early Home as a Predictor of Early Adolescent Mental Health

Literature suggests that early experiences have a lasting impact on mental health outcomes; thus, the socioemotional benefits obtained through a warm and nurturing early home environment may persist into early adolescence (e.g., Masten et al., 1999; NICHD Early Child Care Research Network, 2006). In this study the affective quality of the early home was hypothesized to influence early adolescent mental health outcomes such that individuals with a higher affective quality early home were expected to evidence fewer symptoms of psychological distress in early adolescence than individuals with a poorer quality early home. However, the quality of the early childhood home was not found to significantly predict internalizing and externalizing symptoms in early adolescence. These findings are not consistent with existing research which documents the relationship between disrupted, harsh parenting in impoverished homes, and symptoms of psychiatric disorders among children and adolescents (e.g., Conger et al., 2002; Ge, Conger, Lorenz, & Simons, 1994). Discrepant findings may be explained, in part, through methodological differences. For instance, studies which produced the noted findings (i.e., association between parenting and adolescent distress) have largely examined the impact of the adolescent home on concurrent psychological functioning, in contrast to the present study which adopted a longitudinal perspective by examining the influence of the early home on early adolescent psychological distress (e.g., Felner et al., 1995; Ge et al., 1994).

An additional explanation for the current findings is that the early home environment did in fact impact mental health outcomes, but the observable effects had diminished by the time of assessment. For instance, Campbell, Pungello, and Miller-Johnson (2002) examined the relationship between the quality of the early home environment and adolescent scholastic outcomes and found that a higher quality early childhood home was positively associated with early adolescents' perceived scholastic competence. These researchers also found that the effects of the early home environment on perceived scholastic competence diminished over time, as the noted relationship was found when participants were early adolescents, but was not found when individuals were assessed in mid-adolescence. No studies to date have examined the relationship between the affective quality of the early home environment and early adolescent mental health. Drawing inferences from the study by Campbell et al. (2002), it is possible that the effects of the early home on later developmental outcomes fade over time. Therefore, in the present study any socioemotional benefits acquired through high quality early home environments may have diminished over development, such that these gains were not found to be significant in early adolescence.

It is also of importance to consider whether findings from this study may have differed if the subscales selected from the HOME were examined separately, rather than combined to create one predictor. The four subscales selected from the Infant/Toddler and Preschool versions of the HOME which examine the affective quality of the early childhood home environment (Emotional and Verbal Responsivity of Mother; Avoidance and Restriction of Punishment; Pride, Affection and Warmth; Physical Punishment) may have been entered into analyses as four distinct predictors. As noted in the Measures section, methodological reasons influenced the decision to average responses on the four subscales

across time (i.e., infancy to age 5) to create one predictor for the affective quality of the early childhood home environment. In this study it was important to limit the number of predictors, as an increased number of predictors is associated with decreased power and ability to detect significant associations. Therefore, to increase power within this relatively small sample one predictor was chosen for the affective quality of the early childhood home environment. However, results of statistical analyses may have differed if the four subscales from the HOME represented four distinct predictors, and thus were examined separately in this study. For instance, the absence of physical punishment in early childhood may have emerged as a significant predictor of early adolescent mental health in this sample, observed after separating subscales which measure harsh and punitive parenting (Avoidance and Restriction of Punishment; Physical Punishment) from those that examine the supportive and responsive interactions between parents and children (Emotional and Verbal Responsivity of Mother; Pride, Affection and Warmth).

Treatment as a Moderating Variable

Children randomly assigned to the child care intervention within this study received supportive, responsive, year-round child care services from infancy to school-age. Thus, children reared in impoverished home environments were afforded high-quality, center-based educational child care within a structured and nurturing environment. In addition to providing treated children these direct services, parents were relieved of the stress associated with finding and financing child care services. Theoretically, the socioemotional benefits obtained through participation in the center-based educational child care program should have extended into other settings the children spent a significant amount of time, such as their homes. The intervention was not expected to change the quality of the home

environment; rather, children who received the early child care intervention were expected to be better protected against less supportive home environments than participants randomly assigned to the control group, and therefore to report significantly fewer symptoms of internalizing and externalizing behavior problems as early adolescents. However, the hypothesized treatment by early home interaction was not supported in this study. Participation in the early child care program did not significantly decrease the influence of the affective quality of the early home environment on early adolescent mental health outcomes.

One possible explanation for this study's findings is that high-quality, center-based educational child care may not be sufficient in itself to protect high-risk, impoverished youth from the influences of adverse parenting practices and a poor emotional early home environment on later symptoms of psychopathology. As discussed in Chapter I, the benefits early educational programs may have on participants' mental health remain largely unknown, and findings are inconsistent both within and across studies. However, drawing from programs which have reported reduced rates of delinquent behavior, a correlate of socioemotional development, active and extensive parental involvement in the intervention process may be integral to promoting positive mental health outcomes for program participants (i.e., Lally, et al., 1988; Zigler, Taussig, & Black, 1992; Reynolds & Temple, 2005). A direct parenting intervention, delivered in the home, which encourages parental participation in all areas of a child's life (e.g., academic, social and emotional growth), and addresses appropriate parenting and disciplinary practices is likely to be a useful component within early educational child care programs. Parents who are provided guidance on positive ways of interacting with their children, responding to their needs, and providing appropriate

discipline may be better suited to effectively respond to their children (i.e., less harsh, inconsistent parenting and greater warmth), and thereby promote positive socioemotional growth for their children by providing a higher affective quality home.

The Affective Quality of the Early Home as a Moderating Variable

Existing research suggests that early experiences have a lasting impact on social and emotional development (e.g., NICHD Early Child Care Research Network, 2006; Gottlieb, 1997; Sroufe, Egeland, & Kreutzer, 1990). Building from extant literature, the present study hypothesized that a positive early childhood home environment might buffer individuals from adversity in the early adolescent home (i.e., low levels of familial cohesion and high levels of familial conflict), such that those with a more positive early home would evidence fewer symptoms of psychological distress as early adolescents. The affective quality of the early home environment was not found to significantly moderate the impact of the early adolescent home environment on early adolescent mental health.

As noted in Chapter I, the influence of the affective quality of the home environment over the course of development, and its impact on adolescent adjustment has not yet been examined. Given the lack of research in this area, inferences for the present study were drawn largely from attachment literature. Attachment relies heavily on parent-child interactions and the quality of the care-giving environment, characteristics that closely approximate those measured in this study (i.e., emotional climate of the early home and conflict and cohesion in early adolescence). However, findings from the present study conflict with much of attachment literature, which emphasizes how early experiences are integral to later developmental outcomes, given that such early experiences tend to exert a stable influence throughout development (i.e., NICHD Early Child Care Research Network,

2006; Belsky & Fearon, 2002). The discrepancy between the findings in attachment literature and those from the present study may be a result of different constructs (i.e., infant-mother attachment versus the emotional climate of the home environment). Thus, the lack of statistically significant findings in the present study may suggest that, theoretically, a positive early childhood home environment does not have a lasting influence on early adolescent mental health so as to significantly buffer individuals from the effects of a poor quality early adolescent home environment.

The socioemotional benefits acquired through a high affective quality early childhood home environment may not have persisted into early adolescence so as to significantly reduce the effects of a poor quality early adolescent home on symptoms of internalizing and externalizing disorders. It is possible that any significant benefits the affective quality of the early home environment had on participants was offset by later developmental experiences. Drawing inferences from related research, it is possible that more immediate factors and concurrent influences in the early adolescents' lives had a more powerful impact on their mental health than the affective quality of the early childhood home environment (e.g., Lewis et al., 2000). As young adolescents, participants may have been more willing and able to seek support from peers and individuals outside of their homes, and thereby obtain both tangible and emotional resources which reduced the impact of environmental stressors in their lives. In support of this idea is this study's finding that neither levels of familial conflict nor cohesion, as rated by early adolescents, significantly predicted parent reported early adolescent symptoms of internalizing and externalizing disorders. This finding is inconsistent with existing research, which documents the nature in which poor affective quality home environments adversely impact adolescent mental health (e.g., Conger et al., 2002; Ge et al.,

1994). The discrepant findings between extant research and findings from this study may be a result of measurement differences, as studies finding a relationship between adolescent psychological distress and the home environment often utilized self-report measures of adolescent mental health. In addition to methodological concerns, which will be discussed below in greater detail, it is also possible that participants in the present study formed supportive relationships with individuals outside their family, and were able to obtain emotional resources from individuals in their lives that reduced the impact of the early adolescent home environment on early adolescent mental health.

Study Limitations

This study possesses caveats that should be considered when interpreting the findings. The two most notable caveats concern methodological concerns. In the following section the nature in which this study's sample may have affected findings is discussed, as are the ways in which the study's multi-informant design may have influenced findings.

Sample

The size of the sample is a limitation in this study, as the relatively small sample size reduced the power of statistical analyses to detect differences (i.e., increase in Type II error). The demographics and characteristics of the sample should be taken into account when interpreting the findings. Specifically, given that the study sample consisted primarily of African-American children reared in low-income families, findings from this study generalize most to those individuals who fit the demographics of the current study sample.

Measurement Concerns

Parent-report questionnaires. An additional caveat may be the measure used to examine early adolescent mental health in this study. Despite the inherent advantages of longitudinal research, a limitation of prospective longitudinal research is that analyses rely on existing predictors or measures. In the present study parents completed the Child Behavior Checklist (CBCL) during the age 12 follow-up; thus, parents or primary caregivers served as the respondents for the measure of early adolescent mental health. Prevalence rates of psychiatric illness have been noted to vary based upon informant (i.e., parent, teacher, child) (Youngstrom, Loeber, & Stouthamer-Loeber, 2000; Sawyer, Baghurst, & Clark, 1992). Studies have reported that there is often low to moderate agreement between parent and child ratings of youth psychopathology, with correlations between the two falling around .25 (e.g., De Los Reyes & Kazdin, 2004; Handwerk, Larzelere, Soper, & Friman, 1999; Achenbach, McConaughy, & Howell, 1987). Given the disparate rates, type, and severity of problems often reported among children, parents, and teachers, Offord et al. (1996) suggested that “child psychiatric disorders should be conceptualized as informant-specific phenomena” (p. 1078).

Parent reported measures of youth psychopathology introduce the issue of whether parents responded to items based upon their own perceptions and point of view, or reported symptoms from the adolescent’s perspective. Research has suggested that parental psychopathology is likely to influence parents’ perceptions of their child’s behavior, and consequently the ratings parents assign to their child’s behavior on questionnaires (Logan & King, 2001; Offord et al., 1996). In studies utilizing Achenbach’s multi-informant scales of youth psychopathology, specifically the Child Behavior Checklist as completed by caregivers

and the Youth Self-Report as completed by young adolescents, parental perceptions of children's behavior was found to be greatly influenced by the parent's own symptoms (Youngstrom et al., 2000; Phares, Compas, & Howell, 1989).

Research also suggests that adolescents' psychological distress may be under-reported by parents as early signs of psychological disorders often go undetected or are attributed to the normative difficulties adolescents experience (Logan & King, 2001). Parents in the present study may have been unaware of some of the difficulties their children experienced and consequently underreported the presence, or severity of symptoms characteristic of internalizing and externalizing disorders. One study found that among parents of youth meeting diagnostic criteria (DSM-IV) for one or more psychiatric diagnoses, fewer than 40% of parents perceived that their child had problems (Teagle, 2002). Adolescents themselves may view behaviors characteristic of psychiatric disorders as unremarkable, and thus fail to report symptoms to their parents. Studies suggest that youth self-report measures, such as Achenbach's Youth-Self Report, yield particularly helpful information about youth psychopathology, beyond that obtained through parent report (e.g. Youngstrom et al., 2000). For instance, children and adolescents have been noted to endorse significantly higher levels of internalizing and externalizing symptoms on the Youth Self Report than those assigned by parents on the Child Behavior Checklist (Stanger & Lewis, 1993; Youngstrom et al., 2000). Thus, it is possible that findings in the present study may have differed if a self-report measure of psychopathology was used as the measure of early adolescent mental health in this study.

Multi-informant designs. Any statistically significant findings would have been further strengthened by this study's cross-informant design; however, consistency between

informants on constructs may have also altered the study's findings. This study's prospective, longitudinal design limited the measures available for analyses. Researchers have found that results tend to vary when multiple informants are used to assess theoretical constructs as opposed to a single informant (e.g., Ge et al., 1994; Conger et al., 1997). Specifically, studies with a single informant have been noted to find significant associations between measured constructs, while studies utilizing different informants are less likely to report statistically significant associations between theoretical constructs (e.g., Ge et al., 1994). This study's findings may have differed, and significant associations between constructs (e.g., early home and early adolescent home) may have been found if a single informant provided data for the predictor and outcome variables.

Within this study, information for each variable was obtained from a different informant. The fact that data were collected from 3 different informants in this study (HOME observers, early adolescents, and parents) is likely to have obscured the relationships observed between theoretical constructs. For instance, data for Hypothesis 3 were obtained from 3 different informants; home observers rated the affective quality of the early home environment, the early adolescents rated the levels of conflict and cohesion in their home, and parents supplied data on early adolescents' symptoms of externalizing and internalizing disorders. The results from the present study are consistent with previous findings related to monomethod and multiple construct designs, and suggest that significant relationships between constructs (e.g., affective quality of the early childhood home and early adolescent symptoms of psychiatric disorders) may have emerged had a single informant been the source of all data.

Study Strengths

The present study possesses significant strengths in that it employed an experimental design, with participants randomly assigned to treated and control groups. The experimental design increases the confidence of this study's findings, given that this design decreases the likelihood that findings are a result of sampling errors or selection bias. The low rate of attrition and the longitudinal data gathered during the course of this study are additional strengths. Within this prospective study the vast majority of participants enrolled in the early child care study were followed over time, such that several outcomes were assessed as individuals progressed through various developmental stages. Thus, the majority of participants assigned as infants in the early educational study were followed throughout development, such that data were collected on these same participants as early adolescents.

Study Implications and Future Directions

Findings from the present study have important implications related to early educational programs and the mental health of individuals growing up in poverty and are useful for directing future research efforts. Four major implications can be drawn from this study. One implication addresses the importance of studying the mental health outcomes associated with early educational programs, one addresses the significance of interventions designed to improve the mental health of youth in poverty, another implication discusses the importance of studying early interventions with benefits that extend past the early childhood years, and one implication addresses the benefits of adopting a strength-based approach to the study of mental health. Lastly, implications related to policy and programming are discussed.

Mental Health Benefits of Early Educational Programs

Research examining the impact of child care on low-income children's development suggests that high-quality child care is likely to provide an optimal setting for promoting positive emotional and behavioral adjustment (e.g., Vandell, 2004; Votruba-Drzal, Levine Coley, & Chase-Lansdale, 2004). "The consistency, warm engagement, and support for prosocial peer interactions found in high-quality child care arrangements may provide an important context that enhances young children's abilities to regulate their emotional and behavioral functioning and in turn improves their psychological and behavioral well-being" (Votruba-Drzal et al., 2004, p. 309). High-quality early educational child care programs, theoretically, should benefit children's socioemotional development; however, findings within and across studies remain largely inconclusive.

Few studies have examined the mental health benefits for program participants, and those that have most often examined indicators of psychological adjustment such as delinquency, crime, and classroom adjustment, rather than direct correlates of mental health, such as internalizing and externalizing symptoms. To date, the Chicago Study is the only early educational child care program with published findings regarding depressive symptoms among its sample. There are currently no published findings documenting the impact of early educational programs on a greater range of internalizing and externalizing symptoms. Building from the Chicago Study which utilized a self-report questionnaire of depressive symptoms, and the research noted above on parent report versus self-report measures, an interesting study would be one that investigates whether the results of the present study differ when a self-report questionnaire of early adolescent mental health serves as the outcome measure.

Existing literature in the area of early educational child care programs has shown that intervening in the first years of life, and providing supportive, and responsive care-giving are characteristics associated with positive outcomes for program participants. However, the extent to which these characteristics are associated with improvements in children's socioemotional development is less well known (e.g., Votruba-Drzal et al., 2004; Deater-Deckard, Pinkerton, Scarr, 1996). Additional research is required to determine what components may be added to early educational child care programs to promote the mental health of program participants, and how such components will be implemented. For example, a curriculum may be implemented within the early child care setting which addresses the child's mental health needs, and is geared towards promoting healthy socioemotional development. Research suggests that the caregiver-child relationship strongly predicts children's social skills, and is related to decreased rates of internalizing and externalizing behavior (e.g., Peisner-Feinberg, et al., 2001; Votruba-Drzal, et al., 2004). In order to achieve such positive social and emotional outcomes it may be necessary to instruct teachers and caregivers how to respond to children in a nurturant and supportive manner, and how to best handle behavioral concerns consistently and effectively.

Given the paucity of published findings related to early educational child care and mental health, and the fact that the present study was the first to comprehensively (i.e., both internalizing and externalizing symptoms) examine mental health outcomes in early adolescence, additional research is required to better understand the impact of early educational programs on participants mental health. Results from the post-hoc analyses conducted in the present study suggest that symptom classification influences findings. Thus, future research examining youth psychopathology and early educational child care may take

levels of symptomatology, or the impairments associated with such symptoms (i.e., clinical versus non-clinical) into account. Differentiating between clinical and sub-clinical symptomatology may be essential to the study of youth psychopathology, as it may influence one's findings and the conclusions drawn from research studies. However, it is also significant to note that existing literature suggests that both clinical and sub-clinical levels of symptoms warrant study and intervention, as both levels of symptoms are often associated with impairments in life functioning (e.g., Lewinsohn et al., 2000; Hammen & Rudolph, 2003; Rutter et al., 2006).

Improving Mental Health Outcomes for Impoverished Youth

A substantial number of youth experience mental health problems and resulting impairments; youth growing up in poverty are at a heightened risk for poor mental health outcomes (Report of the Surgeon General, 2001; Buckner & Bassuk, 1997). One study found that nearly a third of children in poverty experience impairments associated with a diagnosable psychiatric disorder (Buckner & Bassuk, 1997). A wealth of literature suggests that the disproportionate number of young people in poverty with psychiatric impairments is due largely to the nature in which poverty adversely impacts the financial and emotional resources available to caregivers, and consequently compromises the quality of the child-rearing environment (e.g., Costello et al., 2003; Duncan & Brooks-Gunn, 2000, Bradley et al., 2001). Additional research is required to examine interventions that reduce the effects of a poor quality home environment on later adolescent maladjustment, and further explore whether the services provided through early educational child care may in fact buffer youth from a poor affective quality home.

Early Adolescent Mental Health

A particularly beneficial line of research would be to continue examining interventions that are associated with positive mental health outcomes that extend past the early childhood years. As noted in Chapter I, the long-term cognitive and academic benefits of participation in early educational child care programs are well-documented, and have been reported to extend through childhood into adolescence. Given these gains, program participants were likely to have been better prepared to succeed when faced with the increasing cognitive and academic challenges presented in middle and high school. It is equally important to provide youth with the tools required to face the increasingly difficult social and emotional challenges youth entering adolescence experience. Thus, future research should examine whether specific interventions may be added to early educational child care programs to better promote the mental health of program participants, and what components may be added such that benefits persist into adolescence. For instance, a direct parenting intervention may be a useful component of early educational programs. Child care staff may model responsive and supportive caregiver-child interactions for the parents with the child, and teach parents appropriate ways of responding to the child's needs and disciplining the child. Thus, these skills designed to foster healthy psychological development may stay with parents, and in turn the program participants after their participation in the early educational program has ended.

A Strength Based Approach to Mental Health

For several decades the field of psychology has emphasized pathology, such as the presence of mental illness and its associated impairments, as opposed what individual strengths and positive traits contribute to a life of success, health, and happiness (Gable &

Haidt, 2005; Seligman & Csikszentmihalyi, 2000). Research and the funding of grants is largely influenced by pathology, as is practice, where clinicians work to treat mental illness and the difficulties psychiatric disorders introduce to an individual's life (Seligman & Csikszentmihalyi, 2000). The present study, keeping with the medical model influencing much of psychology today, focused on psychopathology. However, individuals, such as researchers in the field of positive psychology, suggest that the study of positive life experiences, the nature in which individual strengths are fostered, and an examination of what allows individuals to attain optimal life functioning are essential in efforts to prevent and treat mental illness (e.g., Duckworth, Steen, & Seligman, 2005). There may be many benefits to examining positive traits, such as competency, internal locus of control, and self-esteem, adopting a strength-based approach to the research and practice of child and adolescent mental health (Taylor, Kemeny, Reed, Bower, & Grunewald, 2000). For instance, an optimistic perspective towards challenges, and a sense of meaning and control over one's life are factors that have been found to positively affect both psychological and physiological health (Taylor et al., 2000). In the words of Seligman and Csikszentmihalyi, "[t]reatment is not just fixing what is broken; it is nurturing what is best" (2000, p. 7).

Researchers suggest that an intervention's true impact should be evaluated by looking at positive outcomes and indicators, in addition to the absence of negative outcomes (e.g., Peterson, 2003; Duckworth et al., 2005). The absence of psychopathology and associated impairments are not synonymous with a happy and healthy life. Duckworth et al. (2005) notes that the "mere relief of suffering does not lead to well-being; it only removes one of the barriers to well-being. Well-being is a process over and above the absence of depression, anxiety, and anger (p. 634). Similarly, Healthy People 2010, a government sponsored

initiative recognizes that mental health extends beyond the absence of pathology to also include successful life functioning, productivity, and the ability to cope with change and overcome adversity (Healthy People 2010, 2000). This initiative is geared towards increasing an individual's quality of life by attending to factors that promote health, and it also seeks to reduce disease and eliminate health disparities. Consistent with the Healthy People 2010 agenda, programs are needed to enhance individuals' strengths, promote competencies, and foster qualities that promote healthy social and emotional development. At the same time, programs are required to reduce the incidence of mental illness among the U.S population, and existing health discrepancies (i.e., prevalence of psychiatric disorders by socioeconomic status). From an early intervention standpoint, early educational programs should focus not only on how to prevent problems from arising, but also on how to promote positive developmental outcomes (e.g., Peterson, 2003). Therefore, future studies may look not only at the presence or absence of psychopathology among individuals who received early educational child care, but also examine what strengths the program may have fostered in these individuals which would contribute to a healthy, satisfying life.

Policy and Programming

More research is required to develop interventions that effectively reduce symptoms of psychiatric illness among children and adolescents, foster individuals' strengths, and make the receipt of psychiatric services accessible for all populations. The significant number of young children who receive early education services annually (e.g., Head Start, Early Head Start) further supports the need to examine the socioemotional benefits early educational programs may offer to at-risk populations, as such early child care settings are accessible to a number of individuals, and effective prevention and intervention efforts delivered in these

settings may help reduce the number of youth experiencing later symptoms of mental illness. More research is required to both determine whether early educational programs are associated with positive mental health outcomes for program participants, and what components or characteristics of these programs positively affect socioemotional development. Research findings which indicate that high-quality early educational child care programs are associated with lasting mental health benefits will encourage the funding of intensive, high-quality early childhood programs for at-risk youth. Policy makers are likely to be attracted to such positive findings due to research which suggests that many symptoms of psychiatric illness in adolescence (e.g., anxiety and depressive symptoms, conduct problems) and their associated impairments persist into young-adulthood (Pine, Cohen, Cohen, & Brook, 1999; Pine, Cohen, Gurley, Brook, & Ma, 1998; Capaldi & Stoolmiller, 1999). The implications on the individual and the economy are significant, given that symptoms of mental illness in young-adulthood have been linked to subsequent unemployment and loss of income (e.g., Whooley et al., 2002). Additionally, given the state of mental health reform, policy makers may be particularly attracted to enhancing the quality of child care settings and utilizing existing resources (i.e., child care, school-based mental health) that will benefit children's mental health and reduce later costs associated with the treatment of mental illness. Further, positive findings will affect policy and programming for children in poverty by highlighting the importance of implementing interventions early in life (i.e., in infancy), making such programs more accessible to those in need, and ensuring that children are provided a responsive and supportive early care environment.

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