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# Physical and Mental Health Interventions in a Rural, School-Based Setting: A comparative analysis of academic performance, behavioral outcomes, and attendance

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To the Graduate Council:

I am submitting herewith a dissertation written by heather n. parris entitled "Physical and Mental Health Interventions in a Rural, School-Based Setting: A comparative analysis of academic performance, behavioral outcomes, and attendance." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Social Work.

Karen M. Sowers, Major Professor

We have read this dissertation and recommend its acceptance:

William R. Nugent, Stan L. Bowie, Bob Rider, Matthew Theriot

Accepted for the Council:

Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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We have read this dissertation  
and recommend its acceptance:

Stan L. Bowie

William R. Nugent

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Matthew Theriot

Accepted for the Council:

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Vice Provost and Dean of the Graduate School

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**PHYSICAL AND MENTAL HEALTH INTERVENTIONS IN A RURAL, SCHOOL-  
BASED SETTING: A COMPARATIVE ANALYSIS OF ACADEMIC PERFORMANCE,  
BEHAVIORAL OUTCOMES AND ATTENDANCE**

A Dissertation  
Presented for the  
Doctor of Philosophy  
Degree  
The University of Tennessee, Knoxville

Heather Nichole Parris  
August 2010

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## Dedication

For Ellenor Rebecca, I could not love you more.

## Acknowledgements

I wish to thank my parents, family, and friends whom without their love and support, this would not have been possible.

I would also like to thank my committee members for their continued input and support.

### **Abstract**

The purpose of this study was to determine the differences in academic achievement, behavioral health outcomes and attendance in poor, rural children receiving physical and mental health services regularly as opposed to those children not receiving the intervention. The intervention was a school-based health and mental clinic located on the school's campus. This study was analyzed by providing descriptive information for several variables including the number of suspensions per year, number of times corporal punishment was used as a means of correction, educational outcomes, total number of clinic visits per year, attendance percentages per year, and number of teacher and parent referrals to the school clinic. Data for this study were presented in multiple charts and graphs and schools are compared using descriptive information. The results suggested that as the number of clinic visits increased across the three year period, the numbers of, and rates of, corporal punishment in the clinic school decreased. In contrast, the available data suggested that across the first two years the numbers of, and rates of, corporal punishment increased in the control school. Further, in the majority of subject areas, the percentage of students' proficiency levels in the clinic school increased across time and the percentages exceeded these in the control school. These findings were consistent with the hypotheses that there will be improvements in the behavioral outcomes associated with the presence of the clinic in the school. Unfortunately there were not enough data to conduct a test of statistical significance of the differences between schools for the third year.



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## **Chapter One**

### **The Problem**

#### **Introduction and Background**

The United States is considered one of the richest countries in the world yet 37.3 million people, including 13.3 million children, are living in poverty (Children's Defense Fund, 2008; U.S. Census Bureau, 2007). According to the Children's Defense Fund, children in America lag behind almost all industrialized nations on key child indicators. The United States has the unwanted distinction of being the worst among industrialized nations in relative child poverty, in the gap between rich and poor, in teen birth rates, and in child gun violence, and first in the number of incarcerated persons (Children's Defense Fund, 2008).

The United States boasts an average child poverty rate four times that of most Western European countries (Children's Defense Fund, 2008; Economic Research Service, 2005; McLoyd, 1998) and today our rate of child poverty is twenty percent higher than the rate for the general U.S. population (Economic Research Service, 2005). The rate of child poverty has increased by more than thirty percent since the 1980's and twenty percent of children currently live in poverty leaving nearly nine million children without health care coverage (Children's Defense Fund, 2008; US Census Bureau, 2003).

Child poverty is a significant social problem that negatively affects children's cognitive, emotional, and behavioral development (Chapman, 2003; Costello, Keeler, & Angold, 2001; Fish, Jacquet, & Frye, 2002; Guo, 1998; Ono & Hsin-Jen Tsai, 2008; Petterson & Albers, 2001). Poverty can make it more difficult for families to raise happy, healthy, well-adjusted children

who look forward to successful futures (Criss, Pettit, Bates, Dodge, & Lapp, 2002; Hill & O'Neill, 2001; Masten, 2001).

Poverty can be found in over-crowded areas where housing is loud, unsafe and often unhealthy (Black & Krishnakumer, 1998). Poverty also strikes in isolated areas where families lack social resources and supports, both of which typically make raising a family easier (Economic Research Service, 2000; Reeves, 2003). However, rural poverty is seemingly deeper and more persistent than metro poverty. Although the metropolitan population is nearly double that of rural areas, the most remote and persistently poor rural counties bear a disproportionate share of our nation's poverty burden (Appalachian Regional Council, 2004; US Census Bureau, 2007). Both central cities and remote rural counties have high rates of poverty relative to metropolitan suburbs and rural counties adjacent to metropolitan centers (Fisher & Weber, 2002). Nearly 28 percent of people living in rural counties live in persistent poverty counties as opposed to 7.2 percent of people living in the most urban areas living in persistent poverty counties. According to the Rural Poverty Research Center (2007), 88% of persistently poor counties are nonmetro.

According to the Appalachian Regional Commission (2004), of the 500 poorest counties in the country in 1999, over 90 percent of them are rural. Of the 382 counties whose poverty rates have exceeded 20 percent in each decennial census for the past half century, 95 percent are rural (Appalachian Regional Commission, 2004; US Census Bureau, 2007).

### *Child Poverty*

Children continue to have the highest poverty rate by age group (Children's Defense Fund, 2004; Economic Research Service, 2005; US Census Bureau, 2007). The 2006 child poverty rate in rural areas was 15.2% compared with 11.8 percent in urban areas (US Census Bureau, 2007; United States Department of Agriculture's Economic Research Service, 2004). In contrast the poverty rate for elders (65 years and over) was 12.2% in rural areas and 9.5 percent in urban locations (USDA Economic Research Service, 2004). The high rates of child poverty have persisted for more than a decade despite declines in other populations' poverty level over time (US Census Bureau, 2003).

With the commencement of the new millennium one of every five rural children was living in a family with income below the official poverty line (Brooks-Gunn, Duncan, & Aber, 1997; US Census Bureau, 2003). Despite declines in the poverty rates for persons in families headed by single females, according to the United States Department of Agriculture, the highest poverty rate by type of family remains female-headed, rural families with one out of every three households living in poverty (Economic Research Service, 2004). More than 2.6 million rural children live in poverty and possibly millions more are living just above the poverty level in families struggling to make ends meet (Appalachian Regional Commission, 2004).

### *Effects of Poverty*

According to Fraser, Kirby and Smokowski (2002), "poverty has an individual and collective effect and has been identified as a risk factor for a range of poor outcomes" (p.38).

These poor outcomes include child abuse/neglect (Gutterman, Lee, Taylor, & Rathouz, 2009; Vondra, 1990), delinquency (Hawkins, Catalano, & Miller, 1992), externalizing behavior disorder (Grahm & Easterbrooks, 2000; Shaw & Vondra, 1995), and emotional and educational maladjustment (Ackerman, Brown, & Izard, 2004; Bradley & Corwyn, 2002). Children living in poverty are more frequently exposed to such risks as medical illnesses, family stress, inadequate social support, and parental depression (Pittman & Boswell, 2008).

Poverty as a risk factor is thought to lie in the presence of multiple stressors associated with inadequate resources (Fraser, Kirby, & Smokowski, 2002). In a study conducted by Bradley, Whiteside, Mundfrom, Casey, Kelleher, and Pope (1994) findings suggest that at least three factors are associated with making poverty a common risk factor. The factors are: (1) lack of parental resources, (2) limited access to adequate health care, and (3) a stressful and chaotic home environment. The most direct effect of poverty is limited parental resources in that adequate nutrition, clothing, shelter, and other basic necessities often go unmet. Poor children often do not receive preventative care, which leaves them eventually requiring the most expensive services, i.e., the emergency room. Finally poverty is considered to be a risk factor because very often the home environment is unstable, unsupportive, unstimulating and chaotic. Additional findings have shown that poverty is both correlated with parental psychological distress and poor family management practices (Dallaire, Cole, Smith, Ciesla, LaGrange, Jacquez, Pineda, Truss, & Folmer, 2008).

Recent literature documents the association between poverty and the negative developmental outcomes in children (Dallaire et al, 2008; Dearing, McCartney, & Taylor, 2001;



Duncan, Brooks-Gunn, Yeung, & Smith, 1998; McLoyd, 1998). Poverty can greatly affect the social resources of children living in such circumstances. Poverty can negate parenting skills which in turn directly impacts the child living in poverty. In comparison with their more affluent counterparts the ratios are 1.3 times higher that a parent reports emotional or behavioral problems within themselves, 3.1 times more likely for a teenage out-of-wedlock birth, 6.8 times higher the likelihood of child abuse or neglect, and 2.2 times higher for experiencing violent crime (Duncan, Brooks-Gunn, Yeung, & Smith, 1998). Children living in poor, rural areas often do not even have their basic necessities met. These children do not receive adequate health care and often their mental health needs go unnoticed or are inappropriately diagnosed (Black & Krishnakumar, 1998; Hakim, Boben, & Bonney, 2000; Hendryz, 2008; Solantaus, Leinonen, & Punamaki, 2004).

Youth developmental opportunities are limited and communities in rural areas generally lack basic resources (Ackerman, Brown, & Izard, 2003; Dearing, McCartney, & Taylor, 2001). Therefore, poor children are disadvantaged even more as their communities of residence are often lacking in important developmental resources. Persons living in rural poverty are more likely to live in an environment with other poor families, and their children are more likely to attend schools with fewer resources and more poor classmates than affluent families are (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1994; Kim, Hong, & Rowe, 2000; McLoyd, 1998).

## *Cognition/Education*

One of the most substantial issues impeding the well being of children living in poverty is their education, or lack of. Poor educational attainment is a major cause of poverty and poverty is a key indicator of academic success (Campbell & Ramey, 1994; Considine & Zappala, 2002; Pagani, Boulerice, Vitaro, & Tremblay, 1999). Education provided to poor rural children is often substandard and inadequate and the pattern of underachievement is especially stark for children of low-income families who are not receiving the teaching and support they should have as they move from home to school to neighborhood and to other settings (National Assessment for Educational Progress, 2003; Proffit, Sale, Alexander, & Andrews, 2004). Of fourth graders eligible for lunch subsidies, only 2% scored as advanced readers and 12% as proficient readers on the National Assessment for Educational Progress evaluation (2000). Children in households with incomes below the poverty threshold have substantially lower test scores than their nonpoor counterparts. Effects are most pronounced in children ages 2-8 who are persistently poor (Guo, 1998; Smith, Brooks-Gunn, & Klebanov, 1998).

Numerous factors are linked to the relationship between poverty and academic performance. Lack of adequate health care, low parental education and stressors in the home environment can impact and influence the child's cognitive ability, which in turn determines their academic performance (Bradley & Corwyn, 2002). The relationship between family socioeconomic status (SES) and academic achievement of children is well established (Amato, 2005; Considine & Zappala, 2002; Hoff, 2003). Current research shows that children in low-socioeconomic status (SES) families are more likely than others to experience less optimal

development such as exhibiting behavioral problems, having lower language skills, poorer reading ability and overall poor school performance (Arnold & Doctoroff, 2003; Fish, Jacquet & Frye, 2002). Other studies indicate that children living in poverty do not perform as well as children from more advantaged backgrounds (Brooks-Gunn, Duncan & Aber, 1997; Leventhal & Brooks-Gunn, 2004; Leventhal & Brooks-Gunn, 2000).

There is a strong positive correlation between education and adverse environments as a student who is unhealthy is less likely to benefit from the educational process (Dallaire et al, 2008; Swerdlik, Reeder, & Bucy, 1999). Research indicates that children living in poverty often times show up for school unprepared to learn. As these children often bring familial problems to school with them such as child abuse and neglect issues, poverty and poor health (Berrick & Duerr, 1996), school staff increasingly have difficulty with students who are mirroring their environments (Leventhal & Brooks-Gunn, 2004).

### *Emotional/Behavioral*

Parents living in poverty may exhibit less adequate emotional-health, they may be more depressed, more irritable, or more likely to change in their emotions (Brooks-Gunn, 2004; Pittman & Boswell, 2008). Other research indicates that warmth of mother-child interactions, the physical condition of the home environment, and especially opportunities for learning account for a substantial portion of the effects of family income on the cognitive outcomes in young children (Bruce, Cole, Dallaire, Jacquez, Pineda, & LaGrange, 2006; Dallaire, Pineda, Cole, Ciesla, Jacquez, LaGrange, & Bruce, 2006; Eamon, 2002; Smith, Brooks-Gunn, & Klebanov, 1997).

Although studies of adult disruptive behaviors have revealed genetic influence, studies of children and infants with problematic behavior suggest the causes are mainly environmental (Ainsworth, 2002), of perhaps which parents are the most prominent source. General marital discord and stressful home environments have been associated with conduct problems appearing early in a child's life (Campbell, 1994). Low quality parenting has repeatedly been associated with behavior problems and is characterized as being inconsistent, authoritarian, lacking in warmth, uninvolved, physically punitive, and not providing adequate care. Shaw and Vondra (1996) assessed mothers of children ages one and two with a personality assessment known to measure characteristics like negative parenting styles. At age 5, the children of mothers who scored highly on the measure were likely to have conduct problems.

In order to meet the needs of our fast paced society and to help alleviate the problems children are faced with, there must be an effort to coordinate services among health care professionals (Carlson, Paavola, & Talley, 1995). This coordination of services could be hardest to achieve in poor, rural areas. A growing trend over the past two decades has been to bring needed services into school rather than to treat the health and social needs of children as distant from their education (Arnold & Doctoroff, 2003; Conwill, 2003). Without substantial assistance these disadvantaged youth are not likely to overcome their dire straits (Kronick, 2000). The poverty stricken youth are living in run-down, depleted housing, resource poor communities and often times with families unable to cope with life's expectations.

## **Statement of the Problem**

In recent decades, rural poverty has been overshadowed by the situation of impoverished families living in disadvantaged urban neighborhoods. Though minimal public attention has focused on the disturbing conditions and isolation of the rural poor, available statistics indicate that rural poverty is very serious (ARC, 2000; Children's Defense Fund, 2004; US Census Bureau, 2003). Census data from 2000 provides a bleak picture of child poverty in rural America, showing that of the 50 counties with the highest child poverty rates, 48 are located in rural America (US Census Bureau, 2003). The percent of urban population with incomes below the poverty line has fallen to 11.8 percent while the corresponding rural poverty rate is 15.2 percent (US Census Bureau, 2007). In 2003, 7 million poor people lived in rural areas and 2.7 million rural children were poor and represented 36 percent of the rural poor (Economic Research Service, 2005).

Children living in poverty are not afforded the same opportunities and resources as their more affluent counterparts (Arnold & Doctoroff, 2003; Considine & Zappala, 2003). In terms of physical health the risk to poor children relative to nonpoor children is 1.7 times more likely for a low-birthweight birth, 3.5 times for lead poisoning, 1.7 times for child mortality, and 2.0 times for a short-stay hospital episode (Duncan, Brooks-Gunn, Yeung, & Smith, 1998). Children who are poor are more likely to die in infancy, lack health care, appropriate housing and adequate food and typically receive lower scores in academia (Children's Defense Fund, 2004; Pagani, Boulerice, Vitaro, & Tremblay, 1999). In regards to achievement, the risk to poor children compared to nonpoor children is 2.0 times higher for grade repetition and high school dropout

and 1.4 times more likely to have a learning disability (Duncan, Brooks-Gunn, Yeung, & Smith, 1998).

The issues that prompted the current study are the higher levels of economic hardship and vulnerability that rural children encounter due to geographic isolation. Lack of resources, high poverty rates, and the educational level of parents, suggests that isolation can be detrimental to educational attainment, and behavioral and mental health outcomes of the poor rural child (Ackerman, Brown, & Izard, 2003; Conger, Conger, Elder, Lorenz, Simons, & Whitebeck 1993; Hoff, 2003; Huston, Duncan, Granger, Bos, McLoyd, Mistry, Crosby, Gibson, Magnuson, Romich, & Ventura, 2001; Huttenlocher, Vasilyeva, Cymerman & Levine, 2002; Linver, Brooks-Gunn, & Kohn, 2002; Masten & Coatsworth, 1998). The literature acknowledges the positive effects that appropriate and adequate services could have on the at-risk child's academic achievement and physical and mental health. However, a need still exists in establishing a system or model for this at-risk population where needed services can be received easily, regularly, and affordably.

The purpose of this study is to determine the differences in academic achievement, behavioral health outcomes and attendance in poor, rural children receiving physical and mental health services regularly and easily as a clinic is located on the school campus as opposed to those children not receiving the intervention.

## **Purpose of the study**

A review of numerous databases was searched including: PsychInfo, Social Science Abstracts, 1983-present, Psych Articles 1985-present, Social Work Abstracts 1977-present, ERIC 1966-present, Nursing Journal @Ovid and Social Science Index 1970-present. Key words searched were “poverty”, “rural Appalachia”, “risks of poverty”, “poverty and academic performance, health risks, and mental health issues”, “children in poverty”, and “full service school clinics.”

The purpose of this study is to determine the effectiveness of an intervention offered to an isolated, rural Appalachian school. The intervention is a school-based health/mental health clinic located on the school’s campus. Differences between rural children living in poverty with access to a school-based health/behavioral clinic and its services will be compared to poor children in the same area who were not offered clinic services on campus. Will clinic services help increase student attendance, as fewer days should be missed with medical services on campus? Would behavioral outcomes improve resulting in fewer disciplinary actions with the implementation of a behavioral health component within the clinic? And will academic performance increase as indicated by improvement of TCAP scores?

## **Objectives of the study**

The specific objectives of this study are:

1. To determine if the presence of a school based health/mental health clinic will increase academic performance in the children receiving clinic services versus those children who do not. If the student is able to receive physical health services they might not have otherwise received, will they be able to pay closer attention in school with the assumption being they are well and healthy, thus increasing academic performance?

2. To determine if the presence of a school based health/mental health clinic will have positive effects on behavioral outcomes in children receiving clinic services versus those children who do not. Do children living in rural areas have behavioral/mental health issues addressed in an appropriate manner? Are the services being offered addressing problem behaviors accurately?

3. To determine if the presence of a school based health/mental health clinic will increase student attendance. If students are “healthy,” both physically and mentally, then they should be able to attend class regularly, prompting and increase in grades.



## **Theoretical/Conceptual Framework**

### *Ecological Theory*

Bronfenbrenner's Ecological theory (1979) provided the basic conceptual framework for this study. Ecological theory is a multi-systems perspective that recognizes the person and their environment. This theory postulates that individual, family, and environmental factors shape children's behavior. The division of these contexts into various levels interacts with one another to produce personal development. Microsystems are those in which face-to-face interactions between a group and the individual occurs, for instance, the family, school, and peer group. Mesosystems are the linkages between two or more settings containing the individual, such as the interaction between the school setting and the family. The ecosystem involves two settings in which the individual is not present. For example, the parent's workplace, or lack of, may influence the child even though the child is not present in that particular setting. Macrosystems consist of the culture in which the first three systems operate, referring to interacting systems, knowledge, customs and lifestyles.

The ecological model proposes that children and young adults' negative outcomes are a function of societal constraints, such as lack of employment opportunities, proximal social influences, such as family stress and conflict, and individual psychosocial characteristics, such as normative beliefs condoning aggression or lack of support for education (Paschall & Hubbard, 1998).

Bronfenbrenner's Ecological theory can provide guidance for social workers, school staff, medical and mental health care professionals and perhaps community members involved in the creation of easily attainable services for children. In Social Work, the ecological model prompts those involved to realize the significance of the person in their environment. The ecological model became a noteworthy feature of social work education and practice in the 1970's. Wachs (1992) suggests that the use of this perspective will allow involved individuals to "view people's lives not as a composite of transactions and exchanges but as a tightly, if irregularly woven pattern."

The ecological model/theory requires attention be given to the child's home and family life, school and health/mental health services, and community resources, or lack of, and the child's parent's socioeconomic status. All of these combined will allow the involved individual to clearly see the importance of academic achievement and healthy physical and mental well-being. If an unstable home environment compromises the child's microsystem then learning will be more difficult and often times impossible. A child living in an environment where they are malnourished and often left at home alone because the parent(s) must work multiple jobs to provide food for their families might not consider school their number one priority. If the school system is in a resource poor community then it is not likely the child will have many opportunities for extra-curricular activities before or after school. It is also common for resource poor communities and poor communities in general, to have inadequate school systems. To account for the child's ecosystem consider the parent's workplace. Often in rural areas jobs are based seasonally so if money coming in is not stable then the family may be too stressed to notice that their child is exhibiting major depressive symptoms that can make learning at school

quite difficult. Also, the child's environment may be further complicated by geographic isolation. In addition to transportation difficulties, the rural location lends itself to a scarcity of resources and fewer services with even longer waiting lists. The ecological model/theory suggests that changes in the child's environment in conjunction with participation from the community may positively affect the child's academic achievement and physical and mental well-being.

### *The Poverty/Welfare Culture Theory*

With an emphasis on the cultural aspects of economic deprivation, this theory explains how poverty and welfare affect children's development, behavior problems, educational attainment, and intergenerational poverty (Corcoran, 1995). This theory suggests that growing up poor has a cultural effect on children and the family process. Lewis (1966) argues that the culture of poverty leads to a unique life style and a set of solutions for human behaviors among poor populations. The culture of poverty creates some similarities in family structures, spending patterns, value systems, and interpersonal relationships. The prevalence of female-headed households and common law marriage among the rural poor may be cultural features of living in poverty. Also, a poverty culture can generate disengagement from mainstream society and bring about a resource poor community where lack of transportation is problematic. This theory illustrates that children raised in poor families assimilate into a culture of poverty, feelings of fatalism, helplessness, dependence, and inferiority, which make them an extremely vulnerable population.

## Hypotheses

1. Children who live in a rural area without the services of a school based health clinic will exhibit lower academic performance

Independent Variable: living in rural area with or without the clinic/intervention

Dependent Variable: child's academic performance

2. Children who live in a rural area without a school based health clinic will have lower school attendance rates

Independent Variable: living in rural area with or without the clinic/intervention

Dependent Variable: school attendance

3. Children who live in a rural area without a school based health clinic will exhibit more behavioral problems resulting in more corporal punishments

Independent Variable: living in rural area with or without the clinic/intervention

Dependent Variable: behavioral problems resulting in more corporal punishments

For the purpose of this study, the operational definitions of certain terms in hypothesis #1, #2, and #3 and terms throughout are as follows: a child is someone in elementary school or junior high, grades kindergarten through 8<sup>th</sup> grade inclusive. According to the United States Department of Agriculture, a rural area is defined as a "county with one or more cities with

under 50,000 residents and total area population under 100,000 (Economic Research Service, 2004). Poverty is lacking enough income to purchase basic needs of food, shelter, clothing and other essential goods and services. Officially the standard used to measure poverty is based on poverty thresholds that are determined by the Office of Management and Budget (OMB) each year. In 2003 a family of three was considered to be living in poverty if they earned less than 14,824 a year. For a family of four the poverty level was 18,660 (US Census Bureau, 2003).

While the cost of items and services for families has changed considerably, since it was first instituted the poverty threshold has not varied except for minor adjustments for inflation. For example, the 1960's model found that an average family spent one-third of their expenditures on food while today their allotment counts for less than one-fifth.

Persistent poverty is defined by the Economic Research Service (2000) as 20 percent or more of a population living in poverty over the past 30 years (measured by the 1970, 1980, 1990, and 2000 decennial censuses).

A school based health clinic is located on campus of the intervention group and the following services are included in the full service school: comprehensive physical assessments for students and school personnel, management of medical conditions, treatment of acute illness in indigent students or those unable to access health care, coordination of services with other providers, and health education and prevention.

Academic performance will be measured using TCAP scores from years 2000-2003 and will include score on the following subjects: reading, math, language, science, and social studies.

Behavioral outcomes include a count of the following: expulsions, alternative school, suspensions, in-school suspensions, corporal punishment, detention, and Saturday school.

### **Significance of the Study**

Poverty affects both urban and rural settings but recently more attention has been focused on urban poverty. This may have given the illusion that rural poverty is not as severe or that perhaps these poor, rural children are getting their needs met in other ways. Research indicates that nothing could be further from the truth. In fact, rural areas tend to have even fewer resources than urban areas. Growing up in poor rural Appalachia could be detrimental on a multitude of levels if resources are not provided with consideration of the geography and local cultures of poor, rural Appalachia.

The effects of poverty and other sociocultural risk factors are mediated, at least in part, through risk chains (Bradley et al, 1994). For example, poverty and low SES may increase family stress, which in turn could lead to inconsistent parenting which could in turn lead to the child acting out at school. The issue becomes a major problem when the child's behavior goes unaddressed due to a lack of available and adequate resources in the community.

Multi-service agencies have been successful in many urban areas at making services available by placing the agencies in central locations, thus meeting the client's many needs without the necessity of transportation to various different locations. Such a model may prove useful in rural areas utilizing schools for service delivery but further research is required in this area.

## Assumptions of the Study

The following are assumptions governing this study:

95% of children in the intervention group received some sort of clinic service (physical or behavioral health)

Children in the control group were without regular health care and/or mental health services

Records were kept in the clinic (what the child came in for and if a behavioral health referral was made)

60% of the population are TennCare recipients and over half of both the clinic and control schools' students are eligible for free and reduced lunches as shown in Table 1:

Table 1: Percentage of Students Eligible for Free and Reduced Lunches

Year	2000-2001	2001-2002	2002-2003
Clinic School	66.8%	70.6%	69.6%
Control School	50.3%	58.9%	64.2%

## **Limitations of the Study**

There are a number of limitations in this study. All findings are based on data provided by the clinic staff and data collection procedures may have varied from year one to year three. It is possible that not every single clinic visit was recorded or recorded incorrectly. The study lacked random assignment and not every single child received services from the school clinic. Also, it is possible that some children may have received numerous services throughout data collection whereas other children may have only used the clinic on occasion or not at all. Due to staff misplacement of some behavioral health records, the study will include missing data. The time frame of the evaluation is also a limitation as three years of data collection and analysis may not be sufficient time to see changes within the school and the student population. Also, it may be possible that offering services at an earlier age may be more beneficial than to students who did not have a health/behavioral health clinic before fifth grade. Data were not collected on children prior to the implementation of the intervention.

## **Organization of the Remainder of the Study**

The remainder of the study will be organized into four chapters. Chapter Two will review and synthesize the appropriate literature and will discuss issues disadvantaged children must try and overcome without being offered the appropriate resources. The literature review will discuss in depth the effects of poverty and lack of resources in relation to education (children unprepared to learn and parents who are lacking education or enough social supports to make school a priority for their child), health (malnutrition and lack of insurance) mental health (as issues go unaddressed or are misdiagnosed) and behavioral outcomes of children living in rural, poverty



stricken Appalachia. The literature review will incorporate family stressors, including: domestic violence, child abuse and/or neglect and alcohol and drug abuse problems as it is relevant to academic achievement, health and behavioral outcomes of rural, poor children. The remainder of the literature review will include studies conducted on full service school clinics. Chapter three discusses the research methodology used in the study, including a description of the sample and all measures used for collection and analysis. Chapter four will present and analyze the data collected using the methodology described in chapter three. Chapter five will include a summary of conclusions from data collected, recommendations for the social work profession and ideas for future research.

## **Chapter Two**

### **Literature Review**

#### **Introduction**

Economic disadvantage is widely recognized as a stressor on parenting and child development (Costello, Keeler, & Angold, 2001). Research shows that children growing up in low socioeconomic status families are more likely than their more average or affluent counterparts to experience less optimal development (Campbell & Ramey, 1994). Child behavior problems and lower academic achievement have been found in children living in low socioeconomic families.

Past research on child development and its relation to living in poverty have mostly dealt with children living in urban populations. Data from the Children's Defense Fund show that all 10 states with the highest rate of poverty are rural and that twenty three percent of rural children are poor (2004). Current research attempts to deconstruct the stereotype of poor children as urban, African Americans living in single parent households as a large number of low-income children are white and living in rural areas in two parent families (Children's Defense Fund, 2004). In addition, the Children's Defense Fund estimates that there are more poor White non-Hispanic children (4.2) million than poor Black children (3.9) million or Hispanic children (4.1) million, even though the proportion of Black and Hispanic children is higher.

The distressing situation of young people growing up in poor rural areas is well documented (Arnold & Doctoroff, 2003; Bradley, 2002; Brody, Flor & Gibson, 1999; Brooks-

Gunn & Duncan, 1997; Brooks-Gunn, Klebanov & Liaw, 1995; Dearing, McCatney & Taylor, 2001; Evans & English, 2002; Fish, Jacquet & Frye, 2002) and many rural Appalachian children are living in poverty.

Education provided to poor rural children is often substandard and inadequate. Youth developmental opportunities are limited and communities in rural areas generally lack basic resources. These children do not receive adequate health care and often their mental health needs go unnoticed or are inappropriately diagnosed (Black & Krishnakumar, 1998; Brody, Stoneman, Flor, McCrary, Hastings, & Conyers, 1994; Hakim, Boben, & Bonney, 2000; Solantaus, Leinonen, & Punamaki, 2004).

Parents of children in rural areas recognize that work wages rarely pull their families out of poverty and most jobs do not provide benefits (Arnold & Doctoroff, 2003; Dearing, McCatney & Taylor, 2001; Duncan & Brooks-Gunn, 2000). These familial stresses could perpetuate domestic violence, child abuse and/or neglect, and alcohol or drug abuse issues (Bell, 2003; Brody, Stoneman, Flor, McCrary, Hastings, & Conyers, 1994; Cummings, Davies, & Campbell, 2000; Purvin, 2003).

Children growing up in poor, rural areas tend to have lower educational achievement, poorer health, and more developmental problems than other children (Brody & Flor, & Gibson, 1999; Chapman, 2003; Costello, Farmer, Angold, Burns, & Erkanli, 1997). Neighborhood effects on child development and well-being seem strongest in early childhood and in late adolescence, although family background and income have a greater effect in early childhood (Brooks-Gunn et al, 1995). In many rural places, physical isolation, inadequate infrastructure, and limited

institutional resources and social support services compound the problem of low family income (Ainsworth, 2002; Brody, Ge, Conger, Gibbons, Murry, Gerrand, & Simons; 2001; Brooks-Gunn & Leventhal, 2004). Many impoverished rural areas lack safe drinking water, public transportation, quality child-care, and satisfactory schools with qualified teachers.

### **Rural Appalachia versus Urban Poor**

Historically, the effects of poverty have been more prevalent in rural communities than in urban or metropolitan areas and are still the case today. Although rural child poverty rates declined in the 1990s, they remain higher than the rates for urban children, 21 percent compared to 18 percent (Economic Resource Service, 2005). Literature indicates that rural children in the South are behind those living in poor urban areas in the South (Ainsworth, 2002). Approximately 25 percent of rural children are in families below poverty, compared with 17 percent of children in urban areas (Appalachian Regional Commission, 2003). Rural/urban disparities are even larger for families that are below 200 percent of the poverty threshold and more than one-half (51 percent) of rural children live below 200 percent of poverty, compared with 37 percent of urban children (ARC, 2003).

The 2003 Census data also show that more children in rural areas of the South (27 percent versus 21 percent for urban areas) are living with a parent who does not have a high school education or the equivalent, a proven indicator of diminished well-being and academic readiness for these children ( Small & Newman, 2001). More than one in five Southern adults have not finished high school and in 2002, of those families receiving Temporary Assistance to Needy Families (TANF), 47.7% of recipients had not finished high school (Children's Defense

Fund, 2002). The disparity in households without a telephone (7 percent for rural Southern children versus 3 percent for urban Southern children) is also a telling indicator of reduced economic opportunity and increased vulnerability for the region's rural families (ARC, 2003).

Rural communities are by definition generally isolated and public transportation, including bus systems/routes, are typically unavailable. Without transportation families are more susceptible to missing doctor's appointments, missing or being late to work as they may have to depend on others for assistance, and in general, lack of social resources for themselves and their children. On average, rural residents have higher unemployment, often as a result of seasonal work, and earn lower wages than urban residents. Residents in rural areas tend to have below-average educational levels and limited job skills (Children's Defense Fund, 2002). Many rural areas also lack jobs that pay a living wage or that pay enough to cover the child-care or transportation costs of working.

The rural poor are less likely than the urban poor to receive welfare income or food stamps and the rural poor who do receive welfare get less cash assistance than they would in urban areas (Gibbs, 2001; Lichter & Jensen, 2001). In 1992, Aid to Families with Dependent Children (AFDC) benefits were typically much lower in rural areas than in more metro states when similar benefits were given (Children's Defense Fund, 1992).

Such differences in poverty rates, education levels of parents, and household ownership of phones or cars suggest higher levels of economic hardship and isolation for rural Southern children as well as more vulnerability as they miss certain opportunities afforded to other children

## **Education**

Educational achievement is strongly linked to family background and socioeconomic status (Davis-Kean, 2005; Haveman & Wolfe, 1995). Many studies have researched poverty and its effects on children's education and results indicate that the family and the child's environment have much to do with academic success. Often inverse correlations are found between the time parents spend at work or away from home, parent's educational background/achievement, and home environment in relation to childhood academic achievement and success. The struggle to make ends meet might leave parents with little time to spend with their children or leave them feeling too exhausted to interact with children in positive ways when they are with them.

A number of studies have suggested that educational intervention is the means to reversing the academic deficits of economically challenged children (but the following studies help demonstrate the need for interventions on many social levels that will result in cognitively stimulating and emotionally supportive home environments.

In a study conducted by Leventhal & Brooks-Gunn (2004) experimental data from Moving to Opportunity for Fair Housing Demonstration (MTO) was examined to see how moving from a highly poor neighborhood to a lower poverty neighborhood affected academic performance of children and adolescents. In regards to achievement testing children in the lower poverty neighborhoods scored higher than those from a highly poor neighborhood.

In a similar study, Dubow and Ippolito (1994) examined the effects of poverty and the quality of the home environment on changes in the academic and behavioral adjustment of

elementary school aged children. Poverty was defined as total net family income, including non-cash assistance such as food stamps. The home environment was assessed using the Home Observation for Measurement of the Environment (HOME) developed by Caldwell and Bradley (1984). This interview/observational assessment noted the quality of cognitive stimulation and emotional support provided in the home. Items such as maternal warmth and acceptance of the child, organization of the environment and opportunities and cultural experiences were reviewed. Higher HOME scores correlated with higher academic achievement. Because this instrument is a Likert scale, the observational data recorded could be inaccurate or biased. However, the coefficient alpha for the elementary school-age version is .73. For assessment of behavioral adjustment mothers completed the 28-item behavioral parental index which is also a Likert scale instrument. Mothers were asked to score their children's behaviors as follows: often true, sometimes true or not true.

Academic achievement was examined utilizing children's scores on the Math and Reading Recognition section of the PIAT. Results indicated the more years that a family was below the poverty line, the poorer the quality of cognitive stimulation and emotional support provided to the child. In addition, the lower the math and reading scores, the higher the child scored on the antisocial behavior score from the behavioral parental index.

Strengths of the study were sample size (N=473) and data collection procedures. Subjects were taken from the National Longitudinal Study of Youth from 1986-1990. This national probability sample included 6,283 women between the ages of 14-21 who were initially interviewed in 1979. In the years 1986, 1988, and 1990 data were collected again regarding the

academic and behavioral functioning of these women's children. However, the time span of the study allowed for attrition and perhaps those leaving the study were the children most needing help.

In another study using the same database, the National Longitudinal Study of Youth (NLSY), Hill and O'Neill (2001) found similar results to Dubow and Ippolito (1994). Hill and O'Neill report that children's academic achievement depends a great deal on the mother's and grandparent's level of schooling and achievement. Results also indicated that as a mother's hours at work increased, the child's academic achievement was affected negatively. Strengths of the study were the measurement of variables and sample size (N= 1861 families). The mother's cognitive achievement was measured by her level of schooling and by her score on the Armed Forces Qualifying Test (AFQT) and the child's cognitive achievement was measured using the Peabody Picture Vocabulary Test-Revised (PPVT-R). According to Hill and O'Neill, the relationship between the two was most dramatic for mothers in the lowest AFQT quintile with more than half of their children scoring in the lowest quintile of the PPVT-R. As mothers scored higher on their AFQT, their children scored in the highest two quintiles. Each additional year of schooling on the mother's behalf accounted for an average increase in child's PPVT-R scores by about .66 percentile points. A particularly interesting finding of this study was that mothers who lived in the South associated with significantly lower PPVT-R scores. The authors thought this to be a reflection of the quality of the mother's and even the grandparent's schooling.

Although controls for race, Hispanic ethnicity, and a variable indicating whether a foreign language was spoken or not are included in the study, a limitation that remains is the



PPVT-R was only given in English so it is likely that the mothers who only spoke a foreign language were at a disadvantage and they scored at least 3 percentage points lower when given the test. This fact was of particular importance for Hispanic children because 93 percent of their mothers came from foreign speaking backgrounds. Thus, scores on the AFQT and PPVT-R could not be assessed with complete accuracy.

Guo's (1998) research addresses the timing of poverty as he demonstrated that long-term poverty has substantial influences on both cognitive ability and academic achievement but that time patterns between the two are very different. Guo's study looked at the same child over time and took into account cognition and achievement. Cumulative family poverty exerts important influence on children's cognitive development. Therefore, cognitive ability is greatly affected by the child living in poverty. Guo argues that cognitive ability is innate and must be nurtured as it is a product of both environment and genetics. He argues that if a particular behavior is to become a normal addition to the subject later in life then the behavior must be acquired in early childhood. The conclusion is that once ability is formed it may be less susceptible to impoverished environments.

In regards to academic achievement, Guo found that childhood poverty does not have an effect on childhood achievement but that poverty experienced in early adolescents is very influential on achievement since academic success is a function of motivation and opportunity, both of which are typically lacking in impoverished households. Similarly, Guo, Brooks-Gunn, and Harris (1996) found that children whose families relied exclusively on welfare since birth were at greater risk of academic failure in grades 4-9.

Wilson, Peterson and Wilson (1993) examined the educational and occupational attainment of young women from low-income, Appalachian families who resided in rural areas. Data was collected from a ten-year longitudinal investigation initiated by the Southern Regional Research Projects. A non-probability sample was drawn from eleven rural Appalachian schools located in Kentucky, North Carolina, and Tennessee. Children from higher SES backgrounds were excluded from the study. The mean education completed by parents of the participants was 9.1 and 8.5 years, respectively, for mothers and fathers. Surveys of youth were conducted during the 5<sup>th</sup> and 6<sup>th</sup> grades (elementary phase), 11<sup>th</sup> and 12<sup>th</sup> grades (high school phase) and during young adulthood when subjects were approximately 21-22 years of age. Three panels of data were collected with phase one being at the elementary school level. Unfortunately, the project questionnaire used in this study was not mentioned. The authors did discuss using the Otis-Lennon Mental Ability Test but this was for identification of children with IQ scores below 60. By reinterviewing the participants from the initial sample, data for the second panel was collected. Most of the surveys were administered in schools but some surveys were sent home. Again, examples of the survey/questions asked were not included in the author's published article and the response may have been greater if surveys has not been sent home but mailed instead. Third panel data was collected by mailing questionnaires to participant's places of residence.

Findings of this study contradicted previous research as the authors found grades in high school failed to predict either occupational or educational attainment, which in turn, educational attainment failed to predict occupational attainment. Wilson et al report that IQ scores, or an individual's personal ability have greater influence on occupational attainment. Wilson et al

conclude that structural limitations of the Appalachian region is common as students frequently attend poorer schools, receive inadequate information about employment opportunities and are exposed disproportionately to role models who demonstrate low attainment.

Considine & Zappala sampled students who were on the Smith Family's Learning for Life program in Australia, 1999. This program intervened with disadvantaged families and children by providing financial and non-material support. The dependent variable was educational performance and students' grades were looked at mid-year, 1999. Students were grouped by birthplace of their parents with Middle Eastern and African backgrounds (N=217) and English-speaking background groups collapsed into one group (N=363). Assessments of grades were as follows: below average, average to good, and outstanding.

In regards to socioeconomic status it should be noted that both "social" and "economic" take on different roles in determining the academic success of children. Social factors have been found to be more significant than economic factors when explaining academic achievement (Graetz, 1995). Parents who are advantaged socially, educationally and economically tend to enforce a higher level of achievement in their children. Results indicated that a student's parents who were university educated had a 39 percent probability of attaining an "outstanding" result as compared to 9 percent of students whose parents had not completed Year 10 of their education. Children of parents who had completed a program similar to TANF in the United States, had a 14 percent decrease in predicted probability of achieving "outstanding" achievement results. Failing to clearly define Year 10, University educated, and Year 12 of education limited the

study and results were not generalizable thus, making it more difficult to apply these research findings to disadvantaged families in the United States.

A binomial logistic regression on academic results was conducted to determine which particular factors influenced “outstanding” results while keeping the effects of other variables constant. In regards to the independent variables the Wald test of significance showed the coefficients were statistically significant for gender, ethnicity, unexplained absences from school, parent’s educational attainment, housing type and student age as reflected by grade level. Single parent versus two parent families, source of family income and geographical location were not statistically significant on school performance outcomes.

### **Health and Mental Health Issues**

Children living in poverty stricken environments face many obstacles, including barriers to optimal growth and development (Crooks, 1999; Goodman, Slap, & Huang, 2003). According to Crooks (1999), “growth and development deficits are of grave concern due to the long-term sequelae associated with them, including reduced immuno-competence, slower cognitive development, and lower work capacity” (p. 130). A recent report from the US Department of Education stressed that mental health is critical to children’s learning and general health status. The report also notes that nearly 21%, or 15 million adolescents and young adults in the US, between the ages of 9 and 17, have a diagnosable emotional or behavioral health disorder but that less than one third get help for these problems (2003).

Lack of income or poverty is the most consistent predictor of disease and premature death in the United States and occurs with regularity among groups identified as vulnerable to poor

health (Flaskerud & Winslow, 1998) and evidence proposing a correlation between poverty and poor growth and nutritional status continues to surface (Duncan, Brooks-Gunn, & Klebanov, 1994; Singh & Harrison, 1997). Recent data from the National Health and Nutrition Examination Survey indicate that obesity in the general population is increasing, placing a large number of individuals at risk of chronic illness with additional evidence suggesting that obesity may be more prevalent among those individuals with lower incomes and less education (1998).

Crooks (1999) examined the relationship between SES, child growth and nutrition status in a rural community with a high rate of poverty. Participants of the study included 88 children (working in a rural community with a small sample size was one of the study's limitations), ages 7-11, drawn from an elementary school sample. The children were European-American, reflecting the ethnic background of the community. Seventy eight percent of the sample were eligible for free or reduced lunches. Data was collected during the 1994 school year and the beginning of the 1995 school year. The children's height, weight, right arm circumference, and right triceps skinfold were measured. Socioeconomic information was gathered from the child's file with parental consent. Results indicated that height increased when father had at least a high school education, with the number of employed parents, and when the mother was employed. The author notes that children who qualified for free lunches were shortest and those who paid for their lunch were tallest but results were not significant. Deficits in height may indicate poor biological outcome resulting from a number of factors occurring in impoverished environments such as, dietary quantity, lack of quality/access to healthcare, and water quality.

With respect to body mass index (BMI), 33% of all children in the sample were above the 85<sup>th</sup> percentile in weight, with 42.8% of boys compared to 23.9% of girls. Also, Crooks states

that 21.4% of boys compared to 8.7% of girls exhibited obesity. Crooks notes that more than just SES contributes to obesity. Factors such as, community economics, an infrastructure that provides limited and/or unsafe activity for children, and/or limited access to high-quality, low-cost food for some isolated families may all contribute to an influx of overweight children living in impoverished areas.

In a similar study conducted by Goodman, Huang, Wade, and Kahn (2003), results indicate that SES had a broad and important influence on health across the population. Overall, lower household income and lower parental education each were associated with approximately one third of depression and obesity in the United States. The authors also note that as the poverty gap continues to increase, so will the number of children exposed to a low SES in the future, which can ultimately lead to poor health and/or mental health.

Poverty can endanger a child's mental health through excessive exposure to poor housing, homelessness, lack of health insurance, and multiple moves (Dubow, Edwards, & Ippolito, 1997). A study examining the effects of poverty on the prevalence of psychiatric disorders in rural Black (n= 541) and White (n=379) children was conducted in 2001 by Costello, Keeler, & Angold. Parents completed a brief telephone questionnaire allowing a subsample of children to be chosen from 17, 117 names, ages 9-17. The authors scored items from the telephone questionnaire (the Child Behavior Checklist) and divided them into ten equal sized groups of lowest to highest scores. Subjects were then randomly selected from one of the ten groups. Once randomly selected, the participants (number previously determined by the researchers budget) were administered the Child and Adolescent Psychiatric Assessment. Parents reported on income level using a scale ranging from \$0-\$60,000 or higher in increments of

\$5,000 dollars. Findings suggest that the prevalence of depression was in fact higher in white children and that poor white children had more emotional disorders, particularly depression, and more oppositional defiant and conduct disorders when poverty was defined using federal criteria. Among black children, the effects on psychiatric disorders were not significant. White children in federal poverty were 80% more likely than non poor white children to have a psychiatric diagnosis.

Limitations of the study included reports of children and parents from a single, isolated geographical area. The interviewed parent reported income information and some were unsure of their partners earned income, causing Costello et al to utilize monetary increments of \$5,000 in their study, thus reducing the accuracy of income estimates. Another limitation of the study was the self-report measures used during wave one of data collection. Parents completed the Child Behavior Checklist verbally via a telephone interview and answers may not have been consistent.

Poverty may limit access to quality housing, diet and healthcare, increasing the risk of poor health and nutrition which in turn affects growth and development (Crooks, 1999). Education and health are inextricably related. Good health facilitates learning, while poor health hinders it, each with lifelong effects (Crooks, 1999). Similarly, a positive educational experience promotes the formation of good health habits, while academic failure discourages it. Destructive, or health-damaging behaviors in children and later in adolescence tend to occur together, as do positive, health-promoting, behaviors.

Nearly forty years ago, Birch and Gussow (1970) published their research findings interrelating health, nutrition, and school failure in disadvantaged children. They pointed to the

cyclical nature of impoverished environments, poor health status, school dropout, and subsequent limited job opportunities that predicted the life span development and failure outcomes across multiple spheres of activity. Low SES provides multiple risk factors, especially for infants, while a higher SES reduces the child's risk factors. Poor maternal health and nutrition, inadequate medical care, and often a lack of family planning heighten risk factors for children living in poverty. Maternal concern for their children and available medical and social supports for mother could help alleviate risk factors often associated with living in poverty.

Poverty is related to poorer cognitive functioning, shorter stature, higher serum lead levels, more dental caries, and more severe asthma (Perskey, Slezak, Contreras, Becker, Hernandez, Ramackrishnan, & Piorkowski 1998) as well as acute and chronic illnesses disproportionately affecting low-income children (Evans, 2004; Fisher & Weber, 2002). Children from low income families spend more time in bed, experience more hospitalizations and have longer stays when insurance permits, and have to utilize the emergency room more often than children from more advantaged backgrounds (Flaskerud & Winslow, 1998; Hakim, Boben, & Booney, 2000).

Medicaid has provided the foundation on which a pediatric health care program is based (Hakim, Boben, & Bonney, 2000). For Tennesseans, TennCare has provided that same foundation. Without this coverage low-income families would not be able to afford premiums or out-of-pocket expenses for medical care. However, living in rural, isolated areas may continue to impede use of medical services. Despite Medicaid insuring millions of children, most research



indicates that use of services remain lower for Medicaid recipients than privately insured children (St. Peter, Newacheck, & Halfon, 1992).

Like Medicaid, TennCare provides access to well-child visits, immunizations, lead screenings, vision and hearing services, dental care, developmental screening, adolescent counseling services, long-term care, and treatment for chronic illness. However, having access to these services and getting appointments scheduled in a timely manner may cause issues for rural families. Despite the Medicaid program, 10.5 million poor people, or 30.4% of people in poverty had no health insurance of any kind in 2002 (US Census Bureau, 2003). Among all adults, the likelihood of being insured increases as the levels of education and income rise (Child Trends DataBank, 2000; US Census Bureau, 2003). In 2002, 8.5 million or 11.6% of children living in poverty were uninsured (US Census Bureau, 2003).

High levels of depression among poor mothers is significant because maternal depression is associated with numerous adverse outcomes in infancy such as language and cognitive problems (Murray, Fiori-Cowley, Hooper, & Cooper, 1996), social interactive difficulties and behavioral problems (Criss, Pettit, Dodge, & Lapp, 2002; Cummings, Davies, & Campbell, 2000; Shields & Cicchetti, 2001). Studies indicate that poor women, especially those with younger children, are more likely to experience psychological problems when compared with other women (Petterson & Albers, 2001). Liaw and Brooks-Gunn (1994) found that 28% of poor mothers reported higher maternal depression as compared with 17% of nonpoor mothers.

Petterson and Albers (2001) examined the independent and interaction effects on poverty and maternal depression on young children's development. Data was collected from the 1988

National Maternal and Infant Health Survey (NMIHS) and a follow-up survey in 1991. A clear advantage of this study was the large sample size with broader variability in family background factors. The longitudinal design of the NMIHS study provided a unique opportunity to research poverty and maternal depression on cognitive and motor development among children ages 28-50 months old.

The initial data collection from 1988 utilized mailed questionnaires based on information from vital records and the follow-up in 1991 utilized computer assisted telephone interviewing and the Denver Developmental Screening Test (DDST). Although DDST has excellent test specificity, the authors note that several studies have raised questions about its sensitivity. For example, children who received a “pass” on the test concurrently or later were found to have subsequent problems. Another possible limitation was that the DDST measure in the first wave of data was based on mother’s reports rather than an external source, such as a doctor or nurse

The response rate in 1988 was 74% and 89% during the follow-up period. Of the 8,285 mothers interviewed cases were excluded if the focal child did not live at home or if someone other than the mother completed the follow-up (217 cases). Cases were also excluded due to missing values on measures of child development (318 cases), maternal depression (49 cases), and number of children (25 cases). The final sample size was limited to 7,677 child-mother dyads.

Results of the study indicate that maternal depression is significantly associated with each measure of child development. Poverty is negatively associated with cognitive development as 80% of nonpoor children as compared to 69.8% of poor children were able to say the name of at

least four colors. Only 45.9% of poor children could count to 10 as compared to 60.4% of nonpoor children.

## **Lack of Social Resources and Supports**

### *Resource Poor Communities*

Although some literature suggests that crowding, noise, and substandard housing conditions can impinge on children's socioemotional development (Evans & English, 2002), the literature on poverty and the development of children has ignored the physical environment (Evans & English, 2002).

Connell, Spencer, and Aber (1994) researched how gender, ethnicity, family economic risk, family structure and neighborhood risk shape the educational experience of African American children and adolescents. Connell et al studied a group of inner city youth in three large metropolitan areas including New York, Atlanta, and NYC/Baltimore/District of Columbia. Findings suggest that family economic risk is negatively correlated with positive outcomes, indicating more positive school outcomes for children from the less poor families. The New York sample indicated that children from families with higher economic risk produced more risky behavior and that subjects from poorer families reported less parental involvement in school.

Paschall & Hubbard (1998) researched poor, African American males propensity for violence. They found that adolescents who had lived in their impoverished neighborhood for more than five years were particularly susceptible to the effects of neighborhood level poverty on their sense of self-worth. Although neighborhood poverty was associated with both family stress

and conflict and the adolescent's self-worth, the neighborhood was unrelated to the adolescent's propensity for violence. However, in a study conducted by Paschall & Hubbard (1998) results indicated that proximal social settings, such as the family environment, and psychological characteristics, such as self-worth, may play a more important role than neighborhood level characteristics in the etiology of violence among adolescents.

Ziesemer, Marcoux, and Marwell (1994) conducted a study on homeless (N=145) and low-income housed children (N=142). The study analyzed the experiences of elementary school students who had experienced homelessness during the survey period. Data were collected between September 1987 and January 1990. Low-income housed children were defined as receiving free lunch and had attended at least two different schools within the previous 2 1/2 years. The study indicated that homeless children's socioemotional and cognitive functioning, when compared to their low-income housed counterparts, was not significantly different. They did however find a significant difference in severity of problems experienced by these two groups when compared with other groups of children.

Approximately one-third of the homeless and low-income housed groups were performing at or above grade level but nearly two-thirds were below grade level. On the problem behavior index no statistical difference was found between the two groups and only 25% exhibited problem behavior scores above the 89% percentile. Interestingly, both groups were assessed by teachers as having more problems than the norm or "average" peer group. The strengths of these findings were enhanced by the researchers' well defined groups but weaknesses are found in the instrumentation in lieu of a Likert type scale.

In a similar study conducted by Leventhal and Brooks-Gunn (2004) experimental data from Moving to Opportunity for Fair Housing Demonstration (MTO), sponsored by US Department of Housing and Urban Development (HUD), was examined to see how moving from a highly poor neighborhood to a lower poverty neighborhood affected academic performance of children and adolescents. Disadvantaged families were recruited from public housing in highly poor neighborhoods and were randomly assigned to one of the following groups: (1) receive vouchers and special assistance to move into private housing in lower poverty neighborhoods, (2) receive vouchers to move into neighborhood of their choice or, (3) remain in public housing. Academic performance was based on repetition of a grade, suspensions or expulsions and achievement test scores.

The study reports data from a three-year follow-up evaluation of the New York City MTO site (N=794). Between 1998 and 2000, 550 families were interviewed (69% response rate). Information on children's academic performances were obtained from standardized testing, interviews conducted with parents of the children, interviews conducted with adolescence (ages 11-18) and, administrative records from the public schools.

Results indicated no significant difference in grade repetition for girls (ages 6-10). Approximately 15 percent across all three groups repeated the current or prior grade. Twenty five percent of boys (ages 6-10) in lower poverty voucher, 11 percent of the traditional voucher, and 14 percent of the control group boys were retained in the current or prior grade. In regards to achievement testing lower poverty voucher boys scored 11 points higher than the control group and lower poverty voucher boys who moved within the program scored 33 points higher than the

control group. Girls living in the lower poverty neighborhoods had scores that were 2 points lower than the control group and girls who moved within the lower poverty program had scores 7 points lower than the control group. For boys moving from a high poverty neighborhood to a lower one did improve academic achievement and lessen the gender divide in girls and boys test scores. In the control group the boys lagged behind the girls academically.

### **Intervention to reduce consequences of poverty**

Clinics established in school settings provide children and adolescents increased access to health and mental health services (Dryfoos, 1995). Services are offered in a convenient and familiar setting by staff members and typically no cost is associated with individual clinic visits, and transportation and missed classes do not pose barriers. School-based clinics offer an array of services, enabling children and adolescents to receive assistance with a range of health and mental health problems (Dryfoos, 1995).

In the full service model, the school does not assume primary responsibility for addressing student needs since they act as equal partners with other agencies and staff in the community (Walker & Hackman, 1999). A full service school maintains coordination between school and family and according to Dryfoos (1995), “full service schools encompass school-based primary health clinics, youth service programs, community schools, and other innovative efforts to improve access to health and social services.” Some school-based programs are more narrowly targeted to children with specific at-risk needs such as counseling for substance abusing adolescents, children of alcoholic parents, or children with divorcing parents (Berrick &

Duerr, 1996). Other programs are more broadly defined and can include case management, advocacy, in-home teaching and demonstration, and health services on site.

One model for a full service school opened in south Florida in 1989. The idea of the Walter Young Human Resource Center began in 1977 with a group of concerned citizens who served as the school advisory committee. In 1985 the city and the school board signed an inter-local agreement that would house a middle-school of 2,000 plus students, recreational facilities, a community library, and an infant day care center with enrollment of 190.

The full service school center includes the traditional middle school curriculum, plus racquet ball, youth after school care, consumer education, a child abuse information center, senior's information and activity center, conference and activity centers, parent education, family counseling and high school completion classes for about 4,500 students (Mackenzie & Rogers, 1997).

Only an informal evaluation of the school has been conducted but some indicators of success are evident. There are 31 middle schools in the district and the Resource Center middle school has scored the highest in the Florida Writing Evaluation. However, the Resource Center is primarily middle and upper socioeconomic class children and would normally be expected to do well on standardized testing (MacKenzie & Rogers, 1997) but other middle schools with similar situations still scored below the Resource Center middle school.

## *History of Full Service Schools*

The idea of combining health and social services within the school context has been around for centuries. At the turn of the century, settlement house workers led the movement toward helping disadvantaged immigrants that were pouring into city schools (Axinn & Stern, 2007; Dryfoos, 1995). As times have changed over the years, so have the attitudes, needs, and political ideation of the public. In periods of poverty, epidemics and unrest, school-based health services have been funded and allowed but when there is competition looming in the private sector, full-service school funding has been depleted (Crespi & Hughes, 2004; Dryfoos, 1995). Social Work is a field that strives for equality and social justice. Activists helped stimulate the development of vocational guidance, home visits, vacation schools, school breakfasts and lunches, and after school recreation programs, largely through volunteerism (Dryfoos, 1995).

The Astoria Plan, implemented in New York City in the 1940's, provided an early look at collaboration between school and health care professionals to improve services of the students. This plan was initiated after a pediatrician noticed the routine physical exams were useless unless teachers and parents were involved. The coordinated efforts of school physicians, nurses and teachers resulted in improved services, follow-up, increased parent involvement and better record keeping (Allensworth & Kolbe, 1987). As these services formalized, schools became the sole providers and the pendulum of need versus political stance began to swing.

After World War II, schools incorporated guidance counselors, social workers, and psychologist but the primary concern was stemming from middle class parents wanting to make sure their children did well enough academically to be accepted into a college or university.



In 1975 the school system became responsible for caring for the physically and emotionally handicapped children as the result of new legislation (*The Developmentally Disabled Assistance Bill of Rights Act P.L. 94-103* and *The Education for all Handicapped Children Act P.L. 94-142*). Services included speech pathology, case management and intensive nursing care (Dryfoos, 1995; Legislation Laws, 1975). This became problematic in 1975 and today half of all school workers are non instructional, or specifically tend to the physical, emotional and behavioral needs of students (Dryfoos, 1995). In response to this issue, outside service providers are being brought back into the school system to help battle poverty, poor community resources, lack of health care and assist at-risk youth.

The Industrial Revolution management style is practiced in most school systems today. It is characterized by a bureaucratic hierarchy, written policies, procedures and job descriptions, a limited span of control and each employee having one boss (MacKenzie & Rogers, 1997). During the last 15 years much attention has been given to school reform and almost every proposal suggests changing the ways in which things are administered and organized. In order for schools and youth to prosper in the new century a new form of leadership must emerge. Mackenzie and Rogers refer to this as “transformational leadership” which is characterized by “emphasis on collaboration, common good, global concerns, diversity and pluralism in structure and participation, client orientation, civic virtues, freedom of expression in all organizations and critical dialogue” (Rost 1991, p.181).

While schools cannot single-handedly overcome the barriers to achievement faced by students coming from less advantaged backgrounds, there is growing evidence to demonstrate

that real improvement in outcomes is possible and that progress is being made (Dryfos, 1995; Society for the Advancement of Excellence in Education, 2003).

## **Chapter Three**

### **Methods and Procedures**

#### **Introduction**

The primary purpose of this intervention was to compare the academic performance, attendance rate and behavioral outcomes of children receiving services from the school clinic as opposed to those who did not receive services. Institutional review board approval was obtained for this evaluation from the Human Subjects Committee College of Social Work, University of Tennessee at Knoxville, Knoxville, TN.

#### **Study Design**

The design for this study was a secondary analysis of data collected during clinic visits, reviewing of TCAP scores over the three year time-span, teacher/parent referrals and behavioral outcomes as indicated by the clinic staff and school faculty for the years 2000-2003. Schools were compared to determine if school clinic services increased academic performance and attendance and decreased corporal punishment and number of suspensions. The name of the school and any identifying information regarding the students has been protected throughout his study.

#### **Intervention**

The program/agency was a school-based clinic offering mental and physical health services in an underserved population in poor, rural southern Appalachia. Since the commencement of the program in August 2000, the clinic has treated over 4,000 children and adults. The clinic provides immunizations, frequent lice checks, acute care, physicals, minor

emergency care acquired during school hours such as a broken arm, medication management and administration, and first aid. The clinic serves the elementary school population grades K-8, staff of the school, the Junior High and the elementary “feeder” schools within the county but only the targeted schools will be assessed during the study. The school-based nature of the Clinic has served a crucial role in multiple purposes, including the reduction of student absenteeism.

The Clinic was a three-year, grant-based project funded through the U.S. Department of Health and Human Services and the County’s Board of Education. It was chosen as one of ten counties in rural parts of Tennessee to receive this federal grant. The proportion of primary care providers to residents in the specified county is 1:2111 as compared to the state ratio of 1:1053 (Tennessee Department of Health, 1999). Until the formation of the Clinic, the County Health Department gave immunizations to children on a sliding scale fee but they did not offer physical exams or acute care for children. In 1999 a survey of county schools reported that 42% of approximately 5,000 children are receiving TennCare coverage.

### **Study Sample**

The sample chosen for this study consisted of hand-written records, notes, and referrals of children in the intervention school from clinic staff, faculty, and parents. The sample consisted of 1,043 children, Kindergarten through Eighth grade. The two schools were compared on the following variables: academic achievement as reviewed by using TCAP scores for each school including grades 3-8 for the three year time-span, attendance record percentages for each school and each year and disciplinary records from each school including corporal punishment and school suspensions.

Data collection began in May 2000 and was completed in December 2005. Each consecutive year students' school performance and utilization of the school clinic was assessed. Since all students were accounted for and performance and clinic utilization were measured each year, no follow-up was necessary. Thus, attrition was not problematic.

Inclusion criteria to receive clinic services included all school age children in grades K-8 in Monroe County and were as follows: (a) children who have been identified as having a health risk or health impairment (b) children who were referred for health or behavioral health services but had no follow up (c) children lacking a comprehensive physical exam (d) children with no primary care provider, lacking health insurance, or needing fee adjustments for those services provided (e) children referred for behavioral assessment and case management and (f) children with acute illnesses, first aid needs or medication administration and management. Written parental consent was obtained for children's use of clinic services. Data collected for this analysis included all children receiving clinic services, parent/teacher referrals for the mental health component of the clinic, and behavioral outcomes as indicated by staff and faculty at the school.

## **Measures**

To ensure that the clinic's goals and objectives were achieved or surpassed an objectives-based evaluation was used. The PI examined the following existing records: (a) attendance (b) disciplinary reports (c) clinic visits (d) reasons for clinic visit and (e) TCAP proficiency score.

Attendance records were reviewed online from the Tennessee Department of Education, *The Monroe County Report Card*, for years 2000-2003. Disciplinary reports included hand-written notes from teachers and principals and included school expulsions, alternative school,

suspensions, in-school suspensions, corporal punishment, detention, and Saturday school. Information regarding disciplinary reports on suspensions and expulsions can also be found online from the Tennessee Department of Education, *The Monroe County Report Card*, for years 2000-2003, but data on suspensions and expulsions are not differentiated from intervention school and control school.

The following services were available from the clinic: comprehensive physical assessments for students and school personnel, management of medical conditions, treatment of acute illness in indigent students or those unable to access health care, coordination of services with other providers, and health education and prevention. For purposes of this evaluation the PI analyzed clinic notes provided by staff and tallied reasons for clinic visits which included the following: sickness, required school immunizations, check-ups, sports physicals, injuries, child behavioral counseling, and family counseling. Secondary data was analyzed for years 200-2003.

TCAP proficiency scores were accessed with permission from the Monroe County Board of Education. The PI collected this data in December of 2005 from the Monroe County Board of Education files. Verbal consent was given by the clinic administrator for PI to make copies of TCAP scores for the intervention school and control school, grades 2-8, for the following subject areas: reading, math, language, social sciences, and social studies. All data collected for this study are now located in a locked closet in PI's home office. All names and identifying information of subjects and materials have been deleted to ensure confidentiality for subjects and data being analyzed in this study.

## **Data Collection Procedures**

The design for this study was a secondary analysis of data collected during clinic visits, reviewing of TCAP scores over the three year time-span, and behavioral outcomes and teacher/parent referrals as indicated by the clinic staff and school faculty for the years 2000-2003. Schools were compared to determine if school clinic services increased academic performance and attendance and decreased corporal punishment and school suspension. The name of the school and any identifying information regarding the students has been protected throughout his study. The sample chosen for this study consisted of TCAP scores for math, reading, language, science, and social studies. Hand-written records, notes, and referrals of children in the clinic from clinic staff and faculty over a three year time span were also analyzed. The three year time-span was chosen since the clinic was funded by a grant and commenced in 2000 and ended in 2003. After 2003 the school-based clinic had to provide its own means for keeping the clinic and clinic services available to the students, teachers, and community. Due to the clinic having no format for intakes or the school utilizing no procedure for recording suspensions and corporal punishment, the recording of such information is inconclusive and inconsistent at best. It should be noted that there is missing data for year two for corporal punishment records for the control school.

The subjects were listed on the clinic intake notebook, had been referred to the mental health component of the clinic by teacher, staff, or parent, had been indicated by name on a hand-written notes regarding suspension and corporal punishment, and review of TCAP scores for years 2000-2003. Subjects were never identified by name, code, or number and as a result, no longitudinal data exists.

## Data Analysis

This study was analyzed by providing descriptive information for several variables including, but not limited to, number of suspensions per year, number of times corporal punishment was used as a means of correction, educational outcomes, total number of clinic visits per year, attendance percentages per year, and number of teacher and parent referrals to the school clinic. Data for this study are presented in multiple charts and graphs and schools are compared using descriptive information.

It is assumed that having access to health and behavioral health clinic services might increase attendance, decrease corporal punishment outcomes, and increase academic achievement as measured by TCAP scores.

Table 2: Variables Used in Descriptive Analyses

VARIABLE	SCHOOL	2000-2001	2001-2002	2002-2003
Suspensions	Clinic	39	77	41
	Control	35	47	45
Corporal Punishment	Clinic	133	129	86
	Control	17	100	Missing data
Clinic Visits	Clinic Only	4,680	8,487	12,898
Attendance	Clinic	94.1%	94%	94%
	Control	93.6%	94.5%	94.2%
Teacher Referrals	Clinic Only	32	9	Missing data
Parent Referrals	Clinic Only	155	85	Missing data



## Chapter Four

### Results

The focus of the current study was the possible relationship between disciplinary actions (school suspensions and corporal punishment) and the provision of behavioral health and mental health services at the clinic. Data on the number of expulsions, alternative school referrals, in-school suspensions, detentions, and Saturday school data were not analyzed due to there being such low numbers of, or the complete lack of, any of these disciplinary actions at all during the three year time-span. For convenience, Table 2 from the previous chapter is provided below as the numbers in this table represent the data analyzed in the following graphs.

Table 2: Variables Used in Descriptive Analyses

VARIABLE	SCHOOL	2000-2001	2001-2002	2002-2003
Suspensions	Clinic	39	77	41
	Control	35	47	45
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Teacher Referrals	Clinic Only	32	9	Missing data
Parent Referrals	Clinic Only	155	85	Missing data

## Suspensions

Figure 1 graphically shows the differences in numbers of suspensions (on vertical axis) across the three years in the clinic (blue squares and line) and control (red squares and line) schools. As represented in the graph, the clinic school had four more suspensions in year one, thirty more in year number two, and a then four fewer suspensions during year three. These results were not consistent with the hypothesis that the clinic school had fewer suspensions than the control school.



Figure 1: Analyses of Suspensions

Figure 2 shows the rates of suspensions (on vertical axis) across the three years for the clinic (blue squares and line) and control (red squares and line) schools. Rates of suspensions were calculated using the formula:

$$\text{Total Number of Suspensions/Number of Children Enrolled.}$$

Table 3 shows the total number of students enrolled in each school across the three years that data were collected.

Table 3: Number of Students Enrolled

<b>School</b>	<b>2000-01</b>	<b>2001-02</b>	<b>2002-03</b>
Clinic	788	815	820
<b>Control</b>	<b>598</b>	<b>624</b>	<b>623</b>

Figure 2 shows that in 2000, the rates of suspensions for the clinic and control schools was .05 and .06 per student respectively. In 2001 the rates of suspension increased to .09 per student for the clinic school but then decreased again the following year to .05 per student, thus resulting in a 47% decrease in rate of suspensions from year number two to year number three.

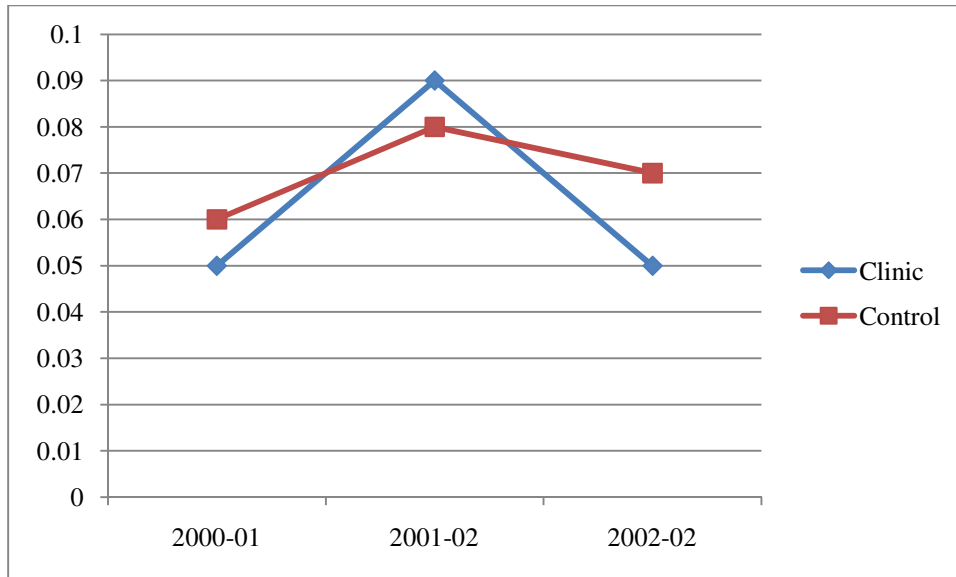


Figure 2: Rates of Suspensions

## Corporal Punishment

Figure 3 shows a graphical comparison of the numbers of incidents of corporal punishment (on vertical axis) between the clinic (blue dots and line) and control (red squares and line) schools by year. The number of corporal punishment outcomes for the clinic school was higher than the control school across the two years that data were available, contrary to hypothesis. However, in year two the control school had a 488% increase in instances of corporal punishment while the clinic school had a slight decrease during year number two, and then had a 33% decrease in year number three. Missing data were reported for the control school in year three.

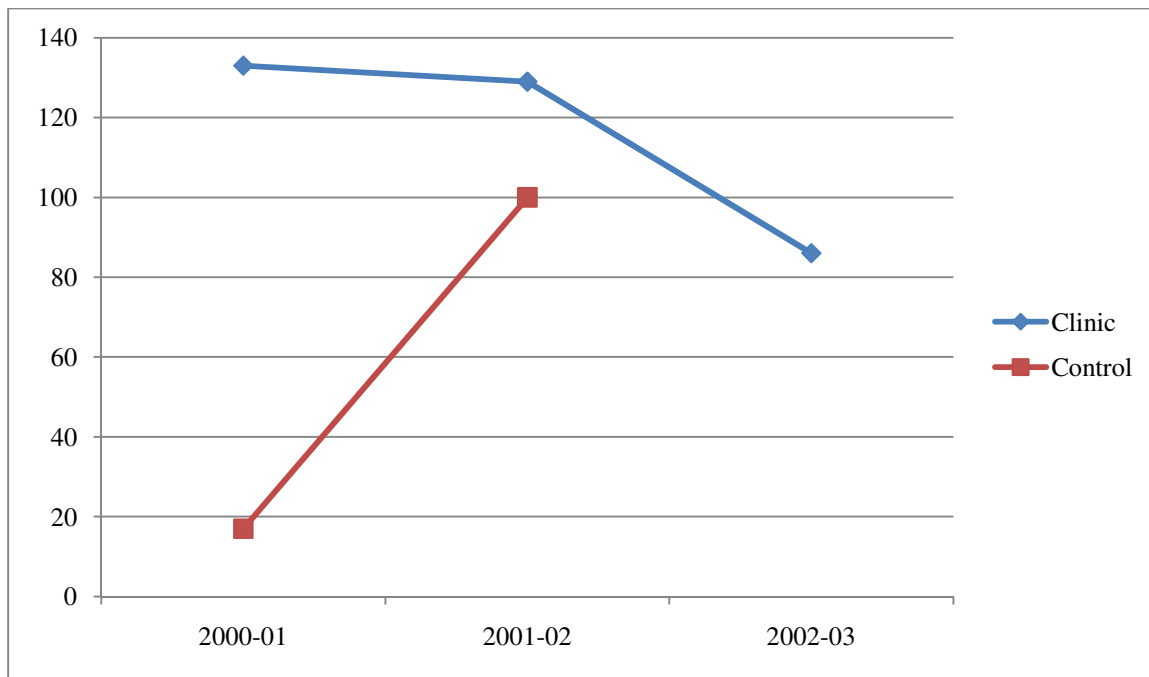


Figure 3: Analyses of Corporal Punishment

Figure 4 shows rates of corporal punishment outcomes (on vertical axis) across three years for the clinic (blue dots and line) and control (red squares and line) schools. Rates of corporal punishment were calculated using the formula:

$$\text{Total Number of Corporal Punishments} / \text{Number of Children Enrolled}.$$

Both the numbers of incidents of corporal punishment and the rate data indicated a substantial increase in corporal punishment outcomes in the control school from years one to two. Missing data were reported for year three in the control school. The clinic school showed a continual decrease over time, resulting in a 61% decrease in disciplinary actions from years one to three, consistent with the hypothesis that clinic services will be associated with a decrease in corporal punishment.

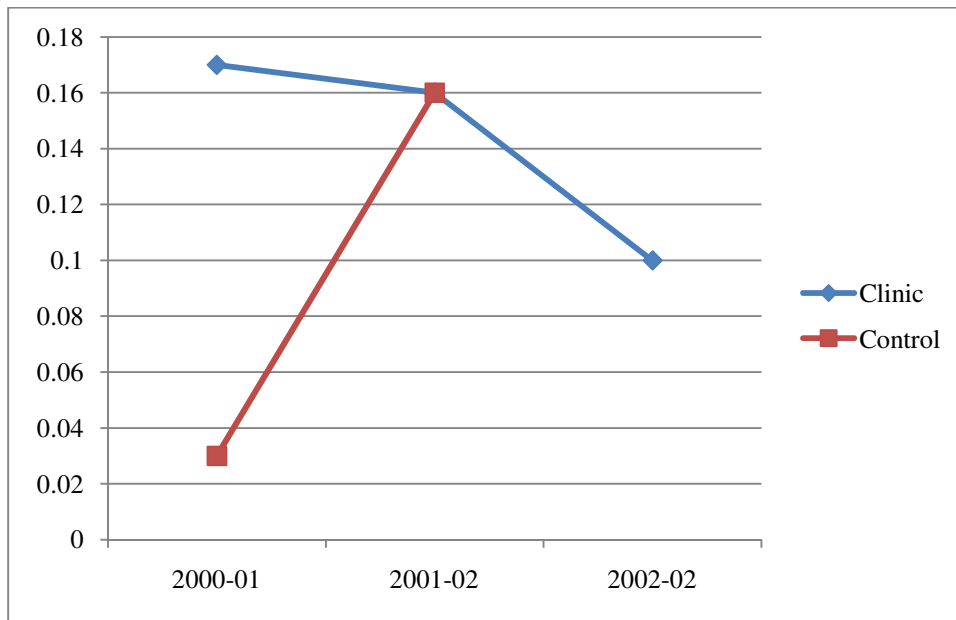


Figure 4: Rates of Corporal Punishment

As can be seen in Table 2, the numbers of clinic visits increased across the years 2000-2003 in the clinic school. The results shown in Figure 5 suggest the possibility that as the number of clinic visits increased, the numbers of corporal punishments decreased in the clinic school. In addition, across the two years of available data the numbers of incidents of corporal punishment increased in the control school. If an increase in clinic visits is taken as an indication of an increased dosage of services provided by the clinic, then the decrease in corporal punishment as service dosage increased suggested a relationship between clinic services and improved behavioral outcomes. The results in Figure 5 appear to be consistent with the hypothesis that clinic services would be associated with a decrease in corporal punishment outcomes.

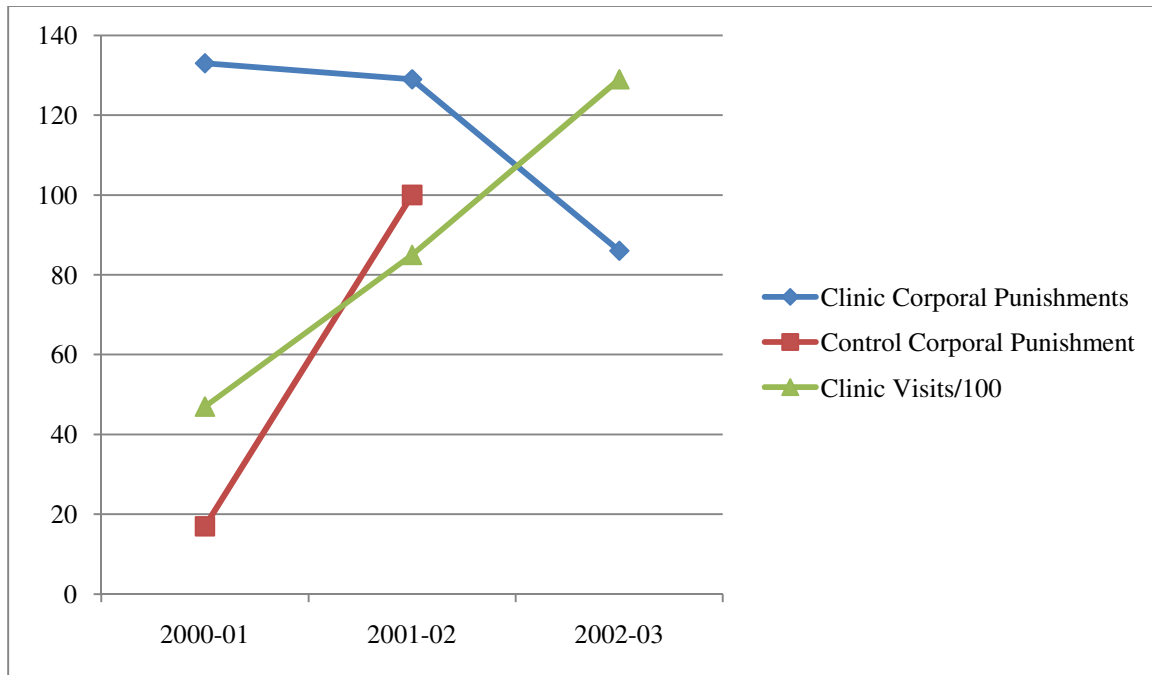


Figure 5: Comparison of Corporal Punishment between Clinic and Control School

## Clinic Visits

Figure 6 graphically compares the numbers of corporal punishments (blue dots and line) and suspensions (red squares and line) in the clinic school across all three years as well as the number of clinic visits (green triangles and line). It was anticipated that as usage of the full service clinic increased, acts of corporal punishment and suspensions would decrease. As can be seen in Table 2, the numbers of clinic visits increased across the years 2000-2003 in the clinic school. The results in Figure 5 suggest the possibility that as clinic visits increased from 4,680 in the first year to 12,898 in 2003, an associated decrease in both corporal punishments and suspensions may have occurred in the clinic school, a possibility consistent with the research hypothesis. Although the number of suspensions increased the second year of the clinic's implementation it decreased by 47% the following year. The increase during the second year may be associated with an increase in the student population from 788 students during year one to 815 during year number two; human biases and leadership styles of the faculty and administration are other possible factors.

Rates of corporal punishment followed a steady decline from years one to three and decreased 35% from commencement of the clinic to the last year that data were collected. Thus, the available data suggested the possibility the school clinic was having a positive impact on student behavioral outcomes and is consistent with the hypothesis.



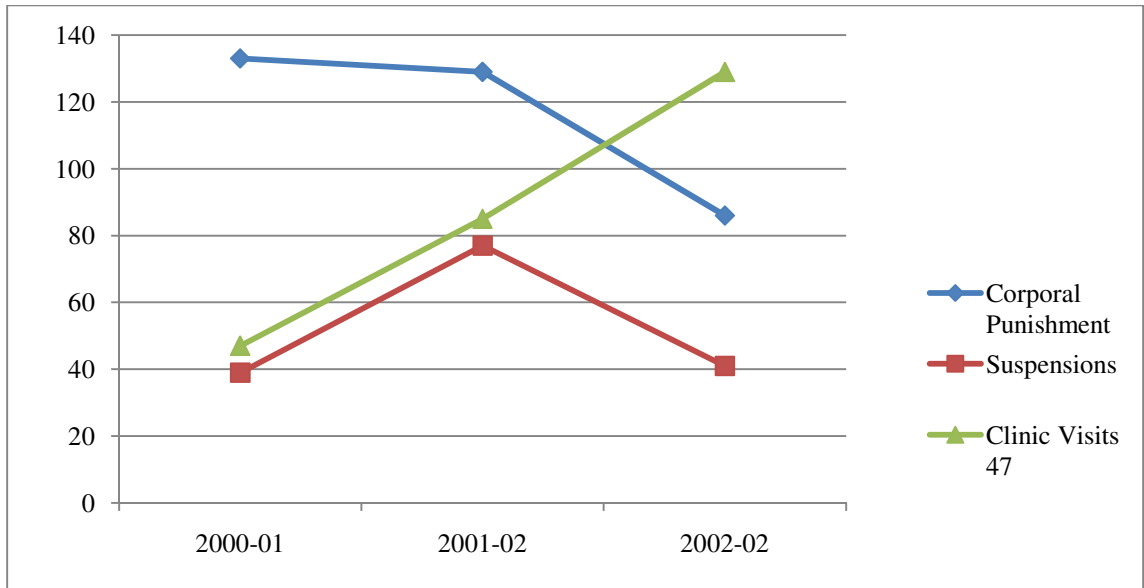


Figure 6: Effects of Clinic Visits on Behavioral Outcomes in Clinic School

### Educational Outcomes

The Tennessee Comprehensive Assessment Program (TCAP) tests are now given to children in grades three through eight. Scores are based on Tennessee state standards, which define what each student should be learning each year. The goal is for all students to score at or above proficiency levels on the TCAP exam (Great Schools, 2009). Each grade level’s TCAP proficiency percentages were used as an outcome measure in determining if the clinic school would show an increase on their TCAP percentages over the allotted three year time-span. For this study, analyses were of data from students in grades 3-8 on reading, math, language, science, and social studies. According to Great Schools (2009) a school may opt to test children in grade 2 and both the intervention and control school chose to do so for the three year time-span.

Figures six through ten graphically compare TCAP scores for years 2000-2003. The data in these figures followed the same cohort of students beginning in third grade in 2000 and ending

with the students in fifth grade in 2002. The results suggested that clinic services may have been associated with an increase in TCAP scores. In several academic subjects the clinic school scores dropped during the second year but usually increased the last year. In the control school for all subjects, with the exception of science, TCAP scores increased from the first to second year, only to decline during the following year. Figures eleven through fifteen graphically compare TCAP scores for years 2000-2003. These data followed the same cohort of students beginning in sixth grade in 2000 and ending in the eighth grade in 2002.

### **Data Analyses of TCAP scores by subject and for grades 3-5**

As shown in Figure 7 below, both schools reported the same percentage of students being proficient on TCAP reading during the first year. During year two the clinic schools' reading proficiency percentages increased by 122%, but declined slightly for year three. The control school also showed an increase in TCAP proficiency percentages by 67% during year two but declined the following year. Although a slight decline occurred for year three, the clinic school showed higher proficiency percentages on TCAP reading than the control school. Unfortunately there were not enough data to conduct a test of statistical significance of the differences between schools for the third year

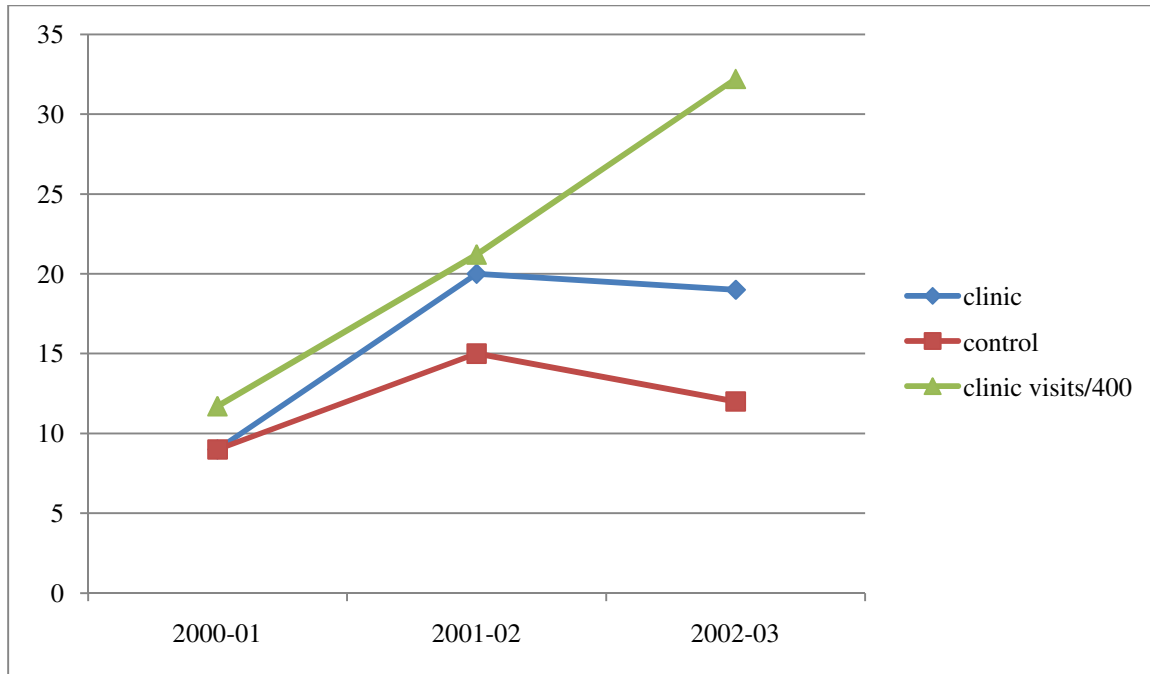


Figure 7: Changes in the Percentage of Children who were Proficient in Reading for a Cohort in 3<sup>rd</sup>-5<sup>th</sup> Grades

Figure 8 shows the clinic and control schools' TCAP proficiency percentages in language. The clinic school percentages emerged slightly higher than the control school for year one and continued to rise by 317% by year three in the language subject area. The language TCAP proficiency percentages increased 325% for the control school in year two and remained stable the following year. Although the control school percentages showed a slight percentage increase, the clinic school still performed 32% higher on language TCAP proficiency percentages than the control school by year three. During this period clinic visits increased continuously and suggests the possibility that clinic visits may be associated with student academic improvement

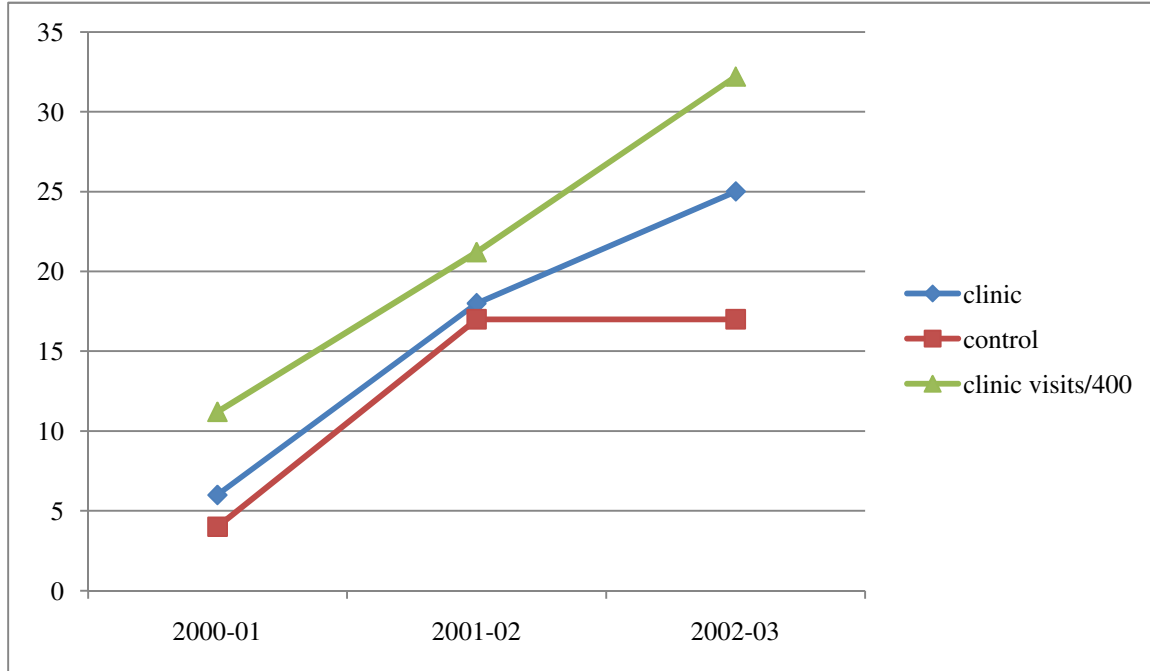


Figure 8: Changes in the Percentage of Children who were Proficient in Language for a Cohort in 3<sup>rd</sup>-5<sup>th</sup> Grades

Figure 9 graphically compares TCAP proficiency percentages between the clinic and control schools in math. The control school commenced with a math proficiency percentage 86% lower than the clinic school. The control school math proficiency increased by 140% during the second year only to decrease in the third year. The percentage of student's math proficiency increased in the clinic school in year two and increased again by 125% the following year. Although control school proficiency percentages were 88% higher than the clinic school's percentages for year two, the clinic school emerged with an increase of 44% higher math scores over the control school the following year.

Unfortunately the data were not available that would have allowed a test of statistical significance of the difference in proficiency percentages between clinic and control schools in the third year.

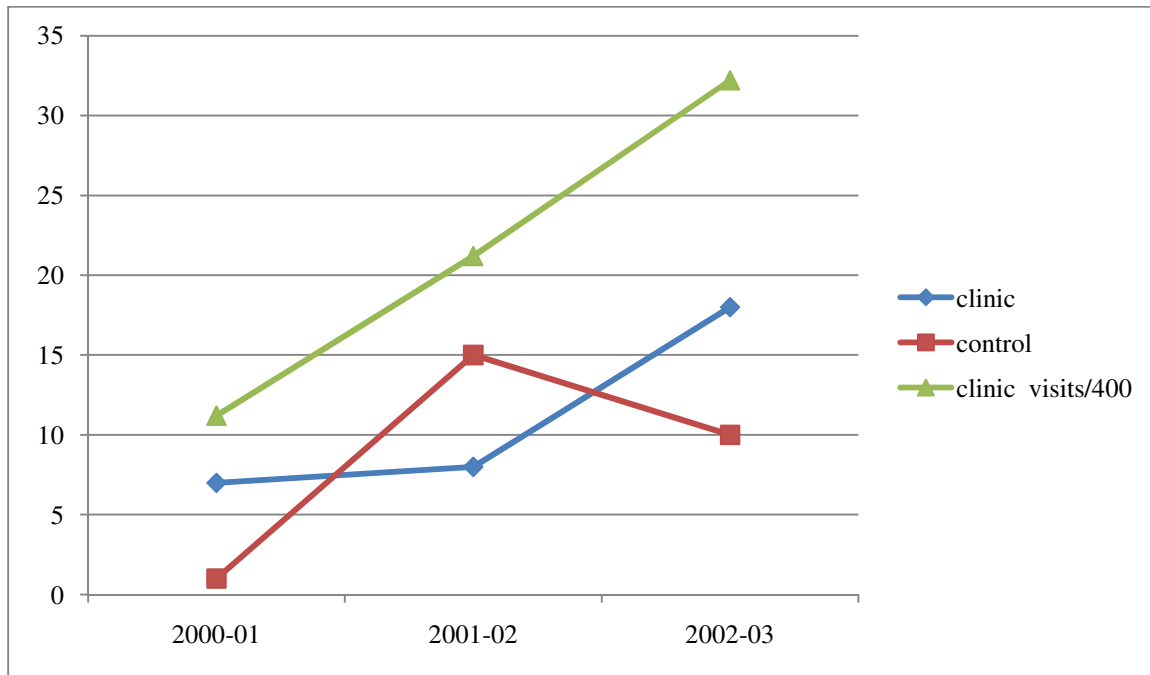


Figure 9: Changes in the Percentage of Children who were Proficient in Math for a Cohort in 3<sup>rd</sup>-5<sup>th</sup> Grades

In Figure 10, both schools showed a steady increase in TCAP science proficiency percentages across the three year period, but the clinic always reported a higher proportion of students reaching proficiency. Overall the clinic school showed a steady increase in TCAP proficiency percentages as clinic visits increased, thus suggesting the possibility that clinic visits may have been associated with students' academic improvement.

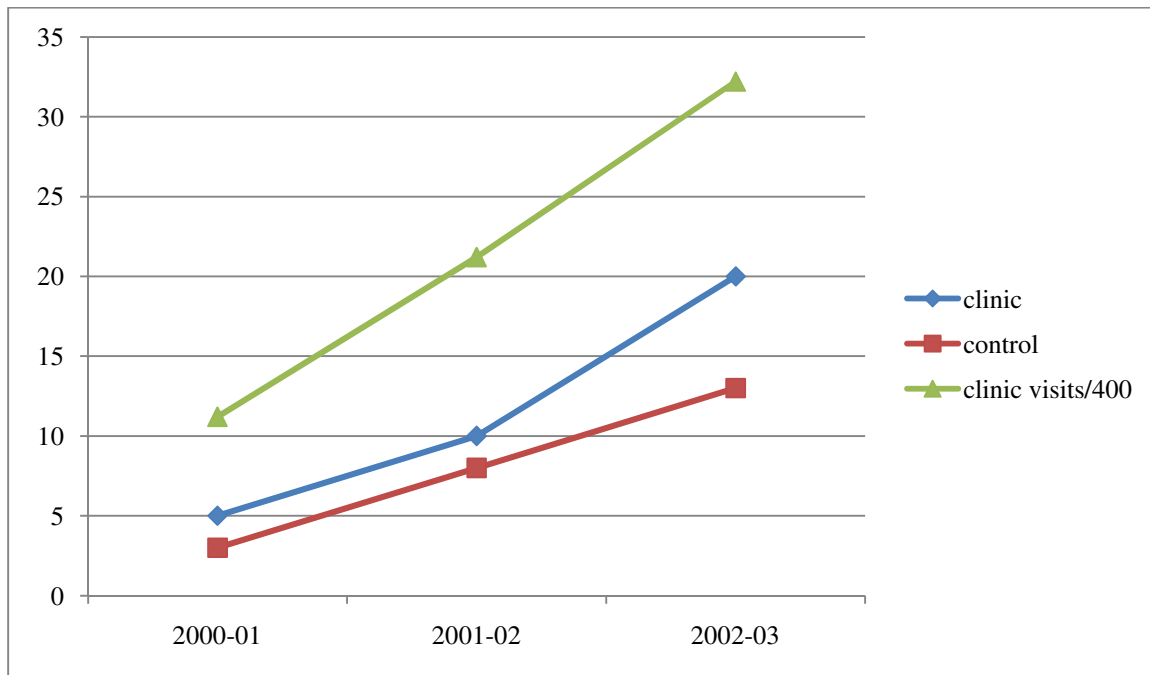


Figure 10: Changes in the Percentage of Children who were Proficient in Science for a Cohort in 3<sup>rd</sup>-5<sup>th</sup> Grades

Figure 11 shows TCAP proficiency percentages for both schools in social studies across all three years. For year number one the control school social studies TCAP scores were 200% higher than the clinic school. However, the large percentage difference may have been a result of fewer numbers of enrolled children in the control school. The control school reported a 22% higher score than the clinic school during year two but in year three the control school TCAP scores drop by nine percent.

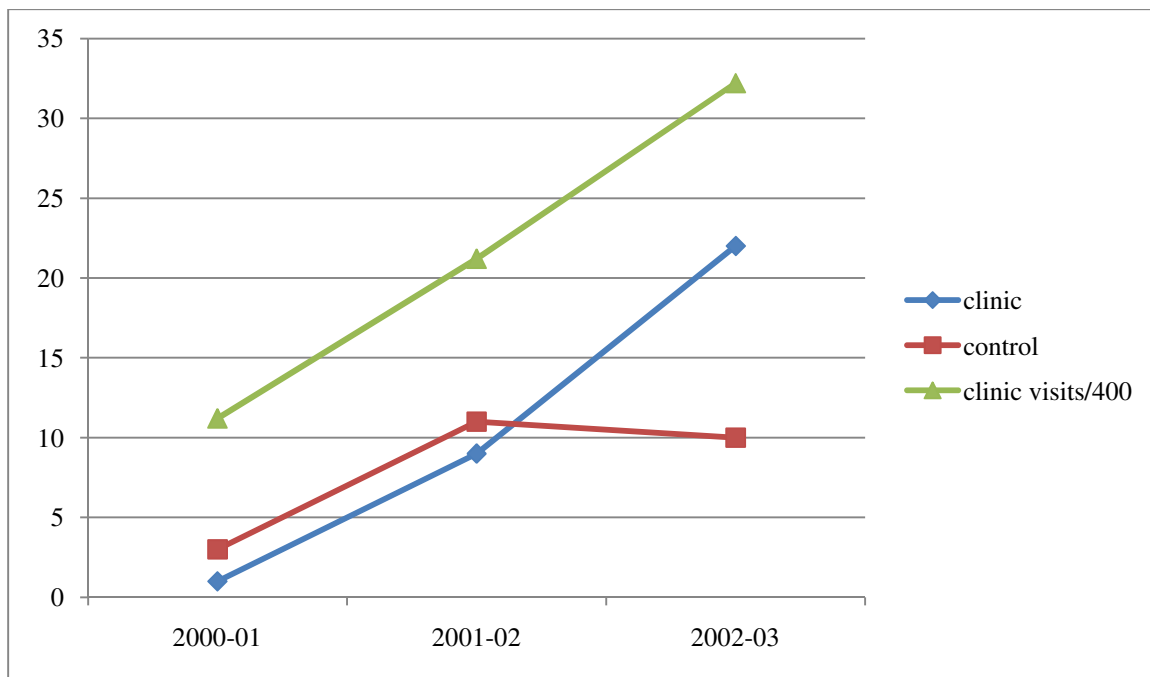


Figure 11: Changes in the Percentage of Children who were Proficient in Social Studies for a Cohort in 3<sup>rd</sup>-5<sup>th</sup> Grades

## Assessing Chance as an Explanation of Educational Outcomes

If the assessment of each of the above five educational outcomes is conceptualized as an independent Bernoulli trial, then the probability of the five outcomes above showing the clinic school performing better than the control can be estimated (Ash, 1993). If the probability of the clinic school performing better than the control school (and vice versa) is considered to be .50 – i.e., each school has the same probability of performing better than the other at the end of the three years – then the probability that the clinic school performs better on all five of the above educational outcomes just by chance is  $.5^5 = .03$ . Thus, the probability is low that the outcomes discussed above were a chance occurrence, though chance cannot unambiguously be ruled out.

### **Data Analyses of TCAP scores by subject and for grades 6-8**

Figure 12 below shows that both schools' TCAP proficiency percentages increased over time with the clinic school reporting higher proficiency percentages for all three years. The greatest difference between years was during year two as the clinic school scores 25% higher than the control school.



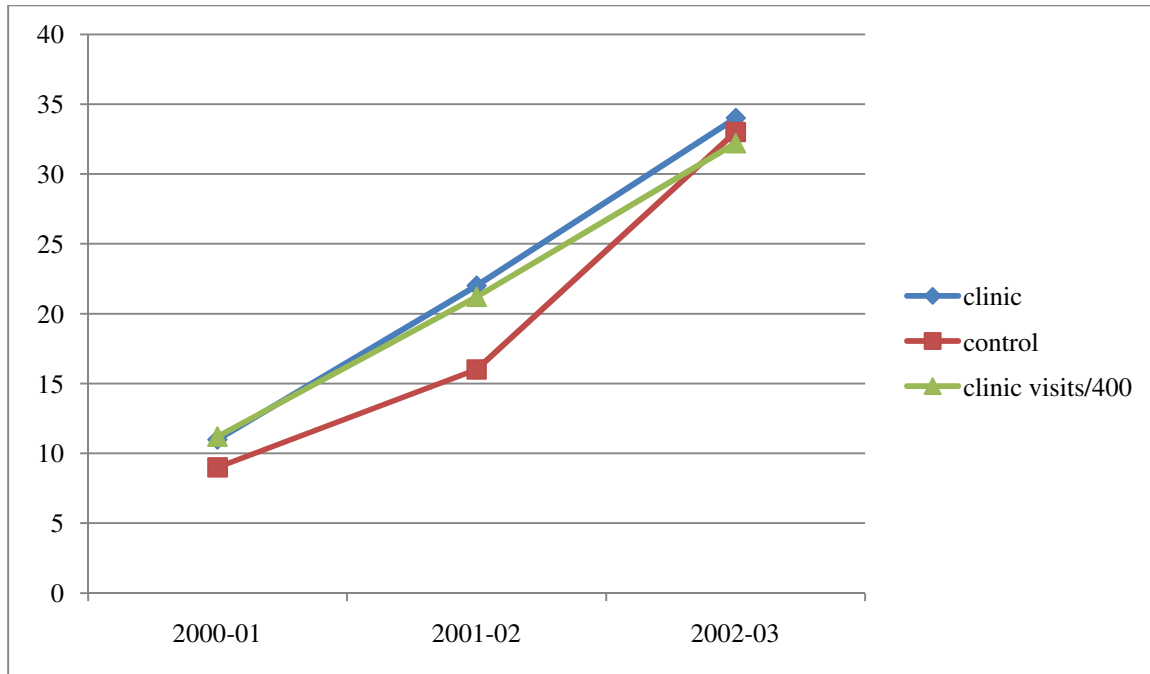


Figure 12: Changes in the Percentage of Children who were Proficient in Reading for a Cohort in 6<sup>th</sup>-8<sup>th</sup> Grades

Figure 13 shows the clinic school's proficiency percentages lower than the control school during year one but as clinic visits increased, the proficiency percentages on TCAP language in the clinic school also increased. Although both schools showed significant improvement, the clinic school continually outperformed the control school each year, with the largest difference in year three.

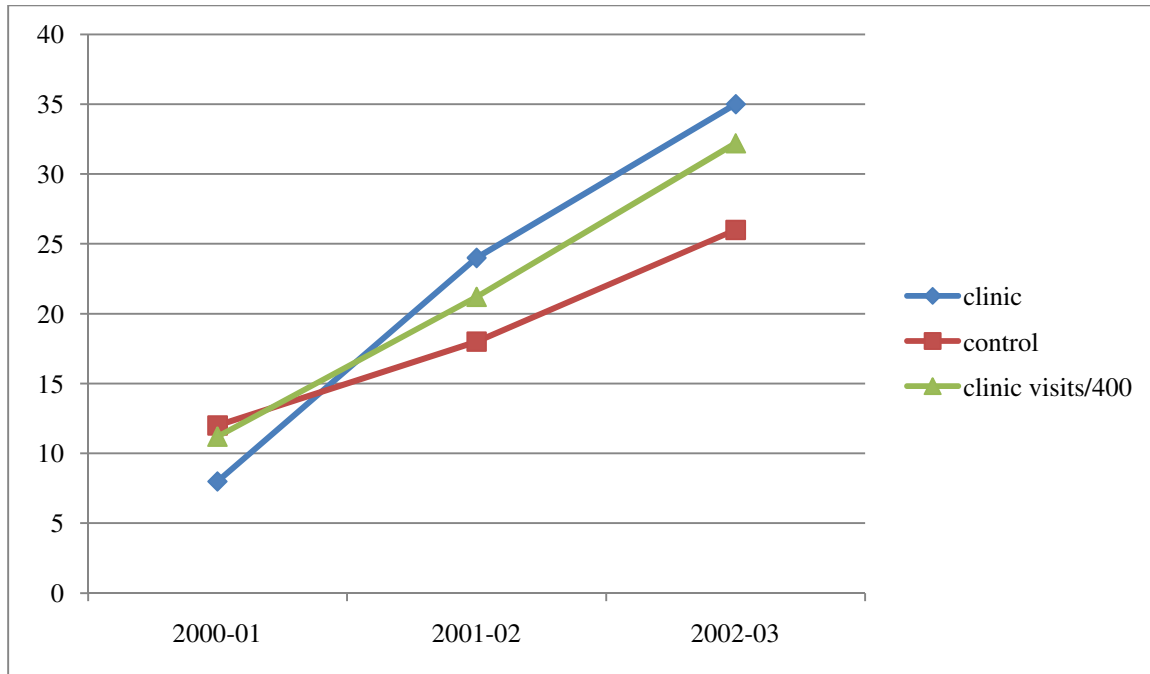


Figure 13: Changes in the Percentage of Children who were Proficient in Language for a Cohort in 6<sup>th</sup>-8<sup>th</sup> Grades

As indicated in Figure 14, TCAP math proficiency percentages for the control school steadily increased over time and showed a 123% increase over three years. The clinic school proficiency percentages were slightly lower than the control schools' during year number two but increased during year number three as clinic visits also increased.

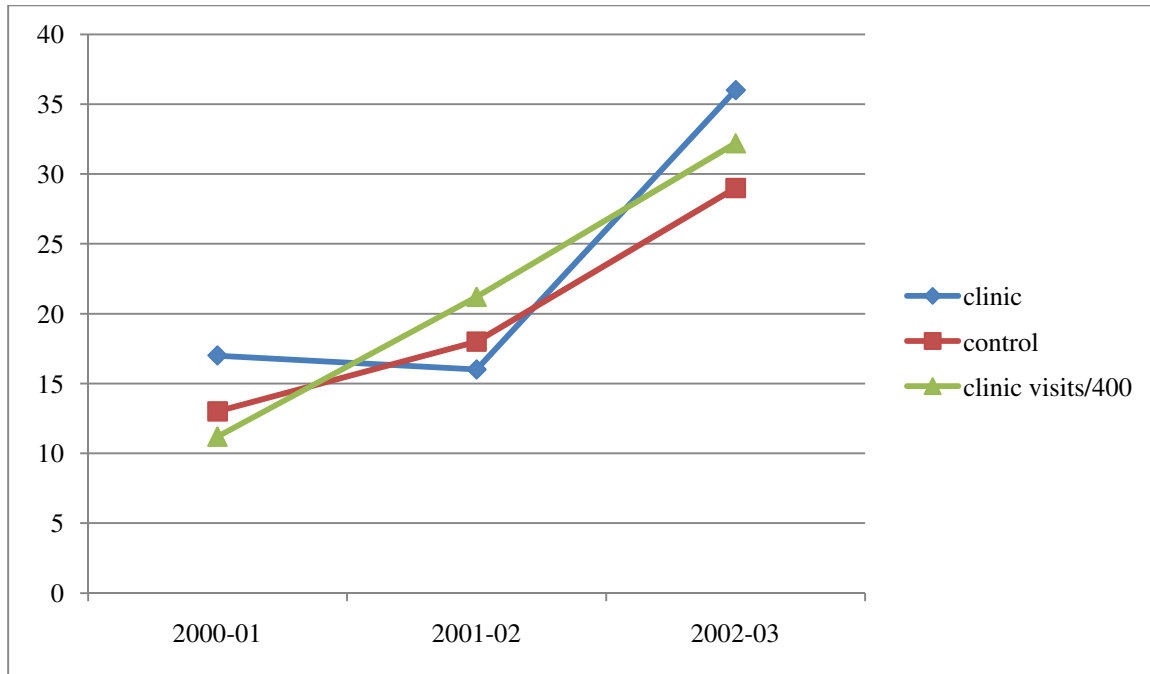


Figure 14: Changes in the Percentage of Children who were Proficient in Math for a Cohort in 6<sup>th</sup>-8<sup>th</sup> Grades

Figure 15 represents science TCAP proficiency percentages for the clinic and control schools across all three years. The control school showed a steady increase in proficiency percentages over time while the clinic school's TCAP proficiency percentages decreased before increasing during the third year.

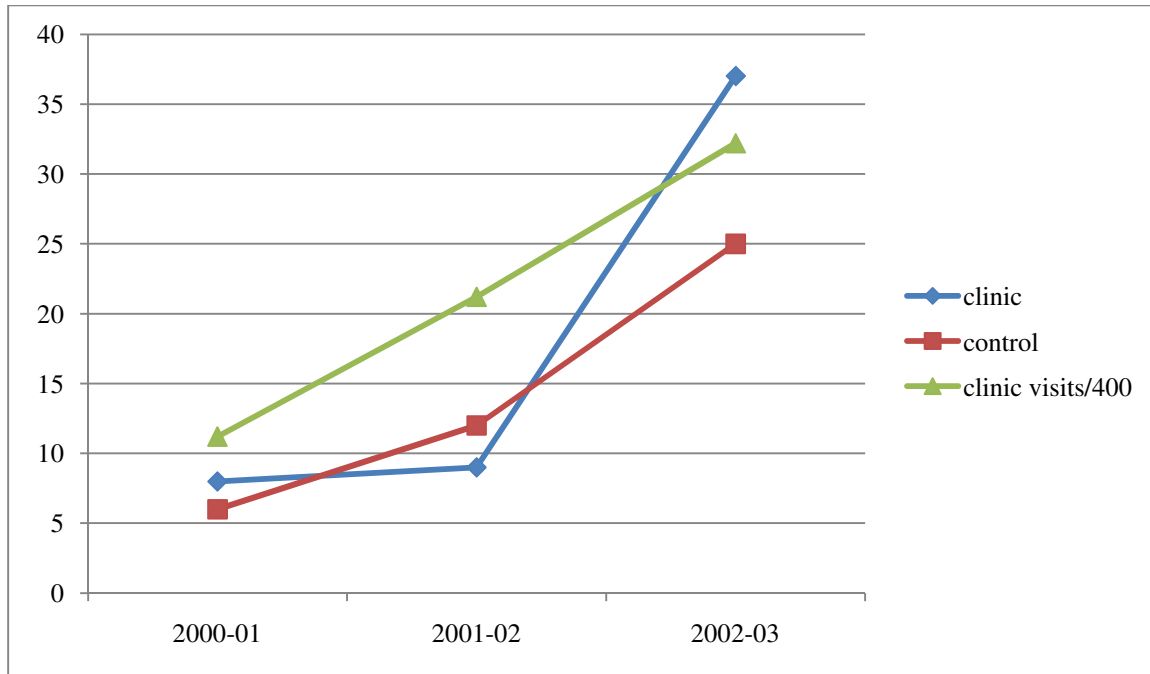


Figure 15: Changes in the Percentage of Children who were Proficient in Science for a Cohort in 6<sup>th</sup>-8<sup>th</sup> Grades

Figure 16 shows that both the clinic and control schools social studies TCAP proficiency percentages steadily increased over time and the clinic school had slightly higher scores throughout the study.

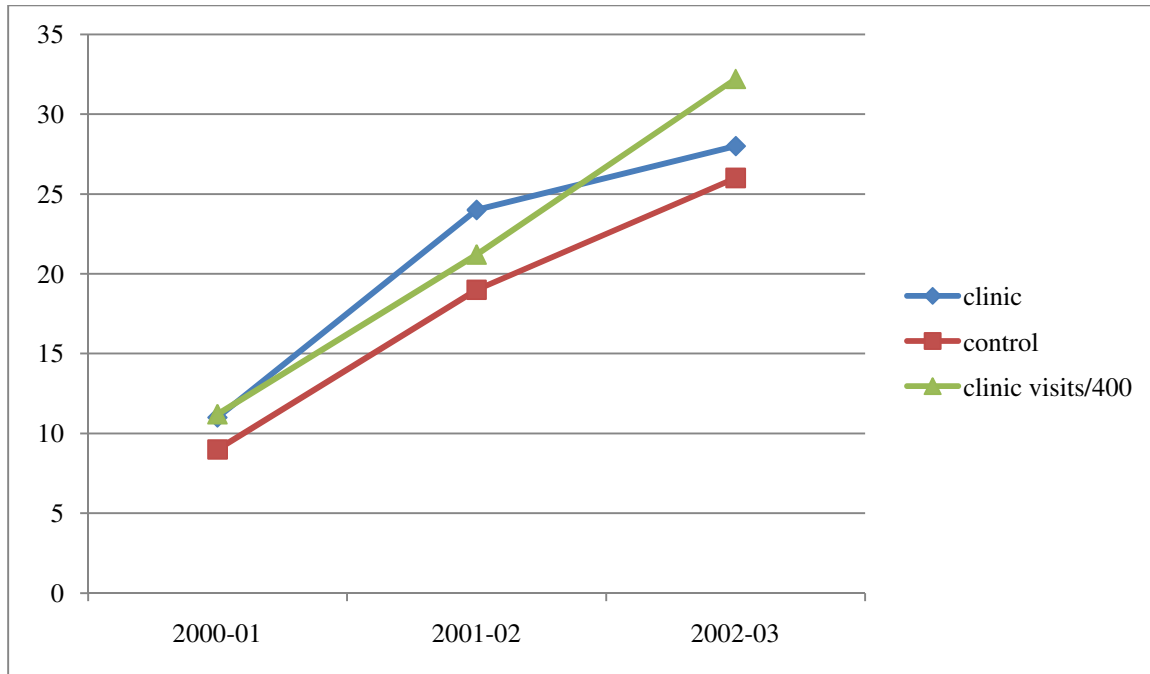


Figure 16: Changes in the Percentage of Children who were Proficient in Social Studies for a Cohort in 6<sup>th</sup>-8<sup>th</sup> Grades

If the above five outcomes are conceptualized as independent Bernoulli trials, with the clinic and control schools each having a .50 probability of outperforming the other on each educational outcome, the probability of the clinic school outperforming the control school at the end of the three years just by chance is about .03.

#### Overall probability Assessment

If all of the ten foregoing assessments of academic performance are conceptualized as Bernoulli trials, with equal probabilities of .50 that one school will outperform the other, the probability of the clinic school outperforming the control school in all ten comparisons just by chance is about  $.5^{10} = .001$ . It is likely that these comparisons are not all independent, so this probability should be interpreted cautiously.

## Number of Clinic Visits

The bar graph in Figure 17 represents the number of clinic visits across all three years (2000-01 green bar; 2001-02 orange bar; and 2002-03 represented by the blue bar) and includes the months August-May, which are representative of the school calendar. The clinic provided walk-in services for students and included comprehensive physical assessments, management of medical conditions, treatment of illnesses such as ear infection and sore throat, coordination of services with other providers, and health education and prevention. Medical services were provided by nurse and nurse practitioners. The number of clinic visits increased dramatically each year from 4,680 to 8,487 during year two, and another increase in year three to 12,898 total visits.

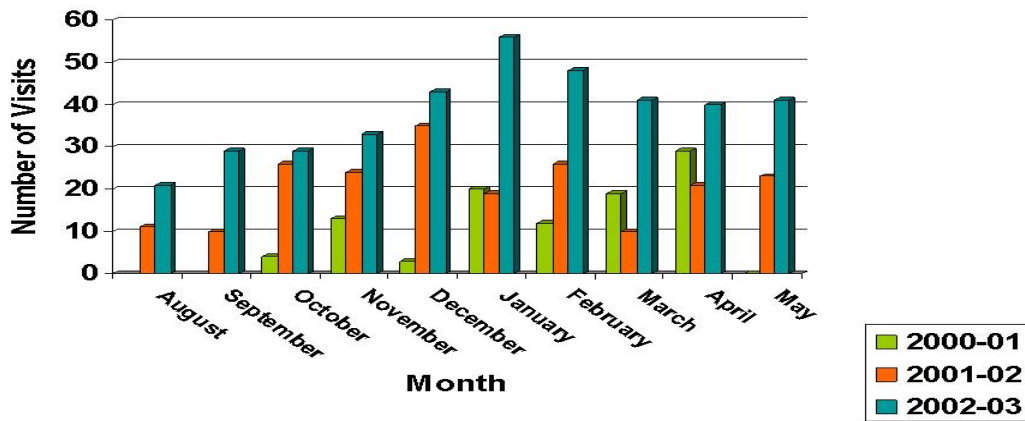


Figure 17: Number of Clinic Visits

## Student Attendance

Student attendance data were collected over the three year time-span. Student attendance throughout all three years of data collection remained consistent at or very near 94%. These results were inconsistent with the research hypothesis.

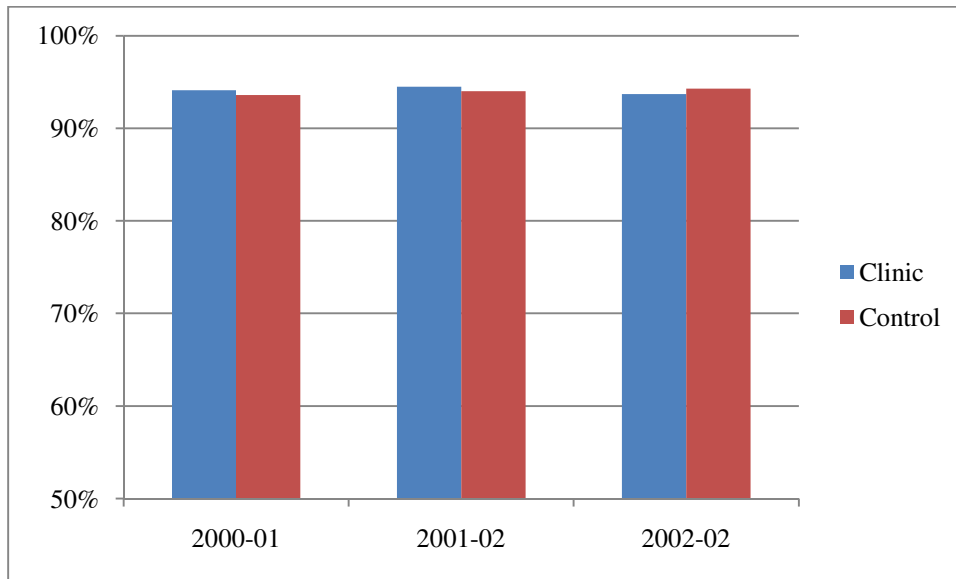


Figure 18: Student Attendance

## **Behavioral Health Referrals by Parents and Teachers**

Of interest to this study was determining if the number of behavioral health referrals increased from year one to year three. Data were only collected for the intervention school since no on-campus clinic was available to the control school. In 2000-2001 the number of parental referrals was 155, a number that decreased in year two. The number of teacher referrals also decreased from year one to year two from thirty two to nine. Missing data were reported for both parent and teacher referrals for the 2002-2003 year.

## **Summary of Results**

In summary, the results discussed above suggested that as the number of clinic visits increased across the three year period, the numbers of, and rates of, corporal punishment in the clinic school decreased. In contrast, the available data suggested that across the first two years the numbers of, and rates of, corporal punishment increased in the control school. Further, in the majority of subject areas, the percentage of students proficiency levels in the clinic school increased across time and the percentages exceeded these in the control school. These findings were consistent with the hypotheses that there will be improvements in the behavioral outcomes associated with the presence of the clinic in the school.



## **Chapter Five**

### **Limitations and Recommendations**

#### **Limitations of the Study**

Since secondary data were collected and analyzed this study must take into account human error and inconsistency among staff and faculty. The clinic staff and school faculty provided written notes/comments and often times the information gathered was not consistent as there were no standardized forms utilized for clinic services or reasons for corporal punishment. Documentation was not kept if the child visited the clinic more than once every day. It was also not documented if a follow-up was needed for each child. Not all children in the school utilized the school clinic making it impossible to infer conclusions. In addition, “feeder” schools, including the control school, were offered “satellite” clinic services after year number one. Also receiving clinic services were staff, faculty, and members of the community, thus making it impossible to know if the number of clinic visits were used for children of the clinic or control school, staff, faculty, or community members.

Hand written notes were also used to describe reasons for corporal punishment and information provided was not consistent since no particular format for the faculty/staff was used. There were also missing data for the year 2003. Notes pertaining to behavioral outcomes were in boxes and in some instances were written on “scraps” of paper. Documentation was not recorded for children that received corporal punishment numerous times. To ensure complete confidentiality of subjects the names of children were not used either in naming, coding, or numbering them. Because of this the PI had no way of tracking one particular student’s progress or lack of due to the clinic services. When TCAP proficiency percentages were reviewed they

were reviewed for grades 2-8 but never on an individual student basis. Since no baseline information was collected for one particular child or group of children, nor were they followed throughout the allotted time-frame, the observations make it harder to detect if the clinic had any bearing at all on the student's attendance, behavioral outcomes, or academic performance.

## **Recommendations**

The results of this current study have implications for practice, research and policy.

### *Implications for Practice*

Is this school-based clinic similar to other rural school clinics? When considering the association of attendance, behavioral outcomes, and academic achievement with the implementation of a school-based health clinic, several conclusions may be taken from this study. With the data provided it may be possible to infer that the school-based clinic alleviated some behavioral outcomes and had a positive effect on academic achievement.

The findings of this study pertaining to behavioral outcomes suggest consistency with previous research which indicates a relationship between corporal punishment and behavioral problems (Bradley, Corwyn, Burchinal, McAdoo, & Coll, 2001; Brown & Lichter, 2004). According to Bradley et al (1994), children living in increased physical environment showed increased levels of competence and decreased levels of behavior problems and these associations were observed more often in poor families. Studies also indicate that preschool and school- aged children who experience psychological maltreatment, such as corporal punishment, perform at lower levels in three domains: ability, academic performance, and social competence.

Issues for social workers in rural areas are numerous and include lack of available resources, transportation issues for clients, little or no health/mental health care, often times inadequate school environments, and an increased use of corporal punishment to deter undesired behavioral actions. The findings of this study suggest that having access to health and mental health care could result in increased academic performance and a decrease in poor behavioral outcomes.

School-based health and mental health clinics are both comprehensive and accessible and therefore are an important mode of service delivery to children and adolescents living in poverty with limited access to health care. Social workers should be familiar with the services being offered in school-based clinics and recognize the need and the unique opportunity to reach an underserved population.

The ecological model provides a reminder to examine the clinic in its community context. As mentioned previously not all students were recipients of the clinic's services and it is recommended that a data be collected on those student's who did not participate in clinic services. When the severity of health and mental health issues increases beyond what a school can accommodate, adequate resources must be made available in rural communities. This task will prove challenging with our current national economic crisis.

### *Implications for Research*

Although much research has been conducted in the school-based clinic area, little attention has been focused on rural areas and the need for a full service school. Although this study helps fill a gap in the literature, the knowledge available in this area could and needs to be

expanded on. The study should be repeated with additional data included and standardized forms should be utilized by the primary data collectors (i.e. clinic staff and faculty). Due to the multiple limitations of the study listed previously, future research should include the use of more comparison groups, preferably through random assignment. If possible future research should also include a way of coding individual students as this would automatically increase sample size and allow the researcher more opportunities for statistical testing.

This study contributes to the knowledge base by reconfirming the need of providing resources in rural locations since a well-documented problem in these areas that remains is lack of adequate resources for health and mental health services. By implementing a school-based clinic in a rural area with little or no resources, the result is increased access to health and mental health services, which according to the data from this study resulted in positive outcomes for the child. Therefore, we must continue the process of health and mental health promotion in schools by keeping the outcomes previously discussed in this study in mind.

### *Implications for Policy*

As we currently face an economic hardship in the US, having access to such data as this study provides may help policy-makers in making informed decisions. It is necessary to meet the urgent health care and social support needs of disadvantaged children and this may be done in the full service school setting. According to the Center for Substance Abuse Prevention (1999), schools are the most common places for children and adolescents to receive early intervention and mental health services.

Policy makers should keep in mind the identification and acknowledgment of the mental and physical health needs of children and adolescents also has implications for society at large and that utilization of full service schools could aid in bridging barriers between school physical and mental health as it relates to the broader, more long-term outcomes related to drop-out rates, truancy, teen pregnancy, and elimination of health and educational deficiencies. For example, emotional abuse and school problems are related to early sexual activity, early sexual activity is related to teenage pregnancy, and teenage pregnancy is related to poor educational outcomes and generational cycles of poverty and welfare dependence. Related issues such as emotional abuse and school problems must also be addressed. Therefore, providing mental health services to children and adolescents during economic hardship is useful for the child's functioning and also has the potential to have a positive impact on future societal problems.

### **Conclusion and Advocacy**

The following conclusions are based on information gathered over the three year time-span and former research. Much of the research on school-based clinics has occurred in urban areas. Less attention has been paid to school-based clinics as part of a national strategy for minimizing barriers to receiving health services in rural areas. The implementation of a school-based clinic in a rural area may be promising to the community at large by providing needed health and mental health services, aiding in the prevention of more serious medical problems since services are now more easily accessible, and through the clinic behavioral health component, decreasing the use of corporal punishment.

Rural residents suffer from a variety of system-level problems that negatively affect their ability to gain access to needed health and mental health services. Potential directions for future

research are to seek effective prevention programs that are specific to the community. Risk factors such as chronic illness, untreated mental disorders, child abuse and domestic violence, substance abuse, and poor academic performance continue to necessitate effective, community-based solutions.

Data analyses in this study proposed the clinic as having a positive effect on academic performance and behavioral outcomes, as well as access to the target population being increased by the frequent contact offered in the school setting. The stigma of seeking treatment, especially likely in smaller, more rural areas, may be lessened through the integration of treatment into a school based service (Dryfoos, 1997). Academic-community partnerships offer a means of bringing together practitioners and laypersons in order to design and implement an effective and needed program for the community.

Kolbe (2005) suggests that modern school health programs must be designed to achieve not only health literacy and health behavior outcomes, but also academic and social outcomes. An in-depth analysis of the clinic should be planned and it is recommended that baseline data be taken the year preceding the clinics implementation, include data over the three year time-frame, and at least two years after the clinic had time to stabilize.

## References

- Ackerman, B. B. (2004). The relationship between persistent poverty and contextual risk and children's behavior in elementary school. *Developmental Psychology* , 40 (3), 367-377.
- Aguilar, B. S. (2000). Distinguishing the early-onset/persistent and adolescence-onset antisocial behavior types: From birth to 16 years. *Development and Psychopathology* , 12, 109-132.
- Ainsworth, J. (2002). Why does it take a village: The mediation of neighborhood effects on educational achievement. *Social Forces* , 81 (1), 117-152.
- Allensworth, D. &. (1987). The Comprehensive School Health Program: exploring an expanded concept. *Journal of School Health* , 57, 409-412.
- Arnold, D. &. (2003). The early education of socioeconomically disadvantaged children. *Annual Review of Psychology* , 54, 517-545.
- Ash, C. (1993). *The probability tutoring book*. New York: IEEE Press
- Axinn, J. &. (2007). *Social Welfare: A history of the American response to need*. New York: Longman.
- Bell, H. (2003). Cycles within Cycles: Domestic Violence, Welfare, and Low-Wage Work. *Violence Against Women* , 9 (10), 1245-1262.
- Berrick, L. &. (1996). *Faces of Poverty: Portraits of Women and Children on Welfare*. New York: Oxford University Press.
- Birch, H. &. (1970). *Disadvantaged children health, nutrition and school failure*. New York: Harcourt, Brace & World, Inc.
- Black, M. &. (1998). Children in low-income urban settings: Interventions to promote mental health and well being. *American Psychologist* , 53, 635-646.
- Bradley, R. &. (2002). Socioeconomic Status and Child Development. *Annual Review of Psychology* , 53, 371-399.
- Bradley, R. W. (1994). Early indications of resilience and their relation to experience in the home environments of low birthweight, premature children living in poverty. *Child Development* , 346-360.



Brody, G. F. (1999). Linking maternal efficacy beliefs, developmental goals, parenting practices, and child competence in rural single-parent African American families. *Child Development* , 70 (5), 1198-1208.

Brody, G. G. (2001). The Influence of Neighborhood Disadvantage, Colective Socialization, and Parenting on African American Children's Affiliation with Deviant Peers. *Child Development* , 72 (4), 1231-1246.

Brody, G. K. (2004). Protective Longitudinal Paths Linking Child Competence to Behavior Problems Among African American Siblings. *Child Development* , 75 (2), 455-467.

Brody, G. S. (1994). Financial resources, parent psychological functioning, parent co-caregiving, and early adolescent competence in rural two-parent African American families. *Child Development* , 65, 590-605.

Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge: harvard University Press.

Brooks-Gunn, J. &. (1997). The effects of poverty on children. *Future Child* , 7, 55-71.

Brooks-Gunn, J. D. (1997). *Neighborhood Poverty*. New York: Russell Sage.

Brooks-Gunn, J. (2004). Don't throw the baby out with the bathwater: Incorporating research into evaluations. *Social Policy Report*. Ann Arbor: Society for Research in Child Development.

Brooks-Gunn, J. K. (1995). The learning, physical, and emotional environment of the home in the context of poverty. *Children and Youth Services Review* , 251-276.

Brown, B. &. (2004). Poverty, Welfare, and the Livelihood Strategies of Nonmetropolitan Single Mothers. *Rural Sociology* , 69, 282-301.

Bruce, A. C. (2006). Development of cognitive diatheses for depression in children: Parenting and negative life events predictors. *Journal of Abnormal Psychology* , 34, 313-322.

Bureau, U. C. (2003). Retrieved July 21, 2003, from <http://www.census.gov/geo/www/>

Bureau, U. C. (2007). Retrieved March 29, 2007, fro<http://www.census.gov/prod/www/abs/statab>

- Campbell, F. &. (1994). Effects of early intervention on intellectual and academic achievement: A follow-up study of children from low-income families. *Child Development* , 65, 684-698.
- Chapman, E. (2003). Alternative approaches to assessing student engagement rates. *Practical Assessment, Research and Evaluation* , 8 (13), 552-564.
- Conger, R. C. (1993). A family process model of economic hardship and adjustment of early adolescent boys. *Child Development* , 63, 526-541.
- Considine, G. &. (2002). The influence of social and economic disadvantage in the academic performance of school students in Australia. *Journal of Sociology* , 38, 129-148.
- Conwill, W. (2003). Consultation and collaboration: An action research model for the full-service school. *Consulting Psychology Journal: Practice and Research* , 55 (4), 239-248.
- Corcoran, M. (1995). Rags to Riches: Poverty and Mobility in the United States. *Annual Review of Sociology* , 21, 237-267.
- Costello, E. F. (1997). Psychiatric disorders among American Indian and white youth in Appalachia: The Great Smokey Mountains Study. *American Journal of Public Health* , 87, 827-832.
- Costello, J. K. (2001). Poverty, Race/Ethnicity, and Psychiatric Disorder: A Study of Rural Children. *American Journal of Public Health* , 91 (9), 1494-1498.
- Crespi, T. &. (2004). School-Based Mental Health Services for Adolescents. *Journal of Applied School Psychology* , 20 (1), 67-78.
- Criss, M. P. (2002). Family adversity, positive peer relationships, and children's externalizing behavior: A longitudinal perspective on risk and resilience. *Child Development* , 73, 1220-1237.
- Crooks, D. (1999). Child Growth and Nutritional Status in a High-Poverty Community in Eastern Kentucky. *American Journal of Physical Anthropology* , 109, 129-142.
- Cummings, E. D. (2000). *Developmental psychopathology and family process: Theory, research and clinical implications*. New York: Guilford Press.
- Dallaire, D. C. (2008). Predicting Children's Depressive Symptoms from Community and Individual Risk Factors. *Journal of Youth and Adolescence* , 37 (7), 830-846.

Dallaire, d. P. (2006). Relation of supportive-positive and harsh-negative parenting behaviors to children's depressive symptoms. *Journal of Clinical Child and Adolescent Psychology* , 35, 313-322.

Davis-Kean, P. (2005). The Influence of Parent Education and Family Income on Child Achievement: The Indirect Role of Parental Expectations and the Home Environment. *Journal of Family Psychology* , 19 (2), 294-304.

Dearing, E. M. (2001). Does higher-quality early child care promote low-income children's math and reading achievement in middle childhood. *Child Development* .

Denham, S. W.-W. (2000). Prediction of externalizing behavior problems from early to middle childhood: The role of parental socialization and emotion expression. *Development and Psychopathology* , 12, 23-45.

Dryfoos, J. (1995). *Full-Service Schools: A Revolution in Health and Social Services for Children, Youth, and Families*. San Francisco: Jossey-Bass.

Dubow, E. &. (1994). Effects of Poverty and Quality of the Home Environment on Changes in the Academic and Behavioral Adjustment of Elementary School-Age Children. *Journal of Clinical Child Psychology* , 23, 401-412.

Dubow, E. E. (1997). Life stressors, neighborhood disadvantage, and resources: A focus on inner-city children's adjustment. *Journal of Clinical Child Psychology* , 26, 130-144.

Duncan, B.-G. Y. (1998). How much does childhood poverty affect the life of children? *American Sociological Review* , 63, 406-423.

Duncan, G. B.-G. (1994). Economic deprivation and early childhood development. *Child Development* , 65, 296-318.

Eamon, M. (2002). Effects of Poverty on Mathematics and Reading Achievement. *The Journal of Early Adolescence* , 22 (1), 49-74.

Evans, G. &. (2002). The Environment of Poverty: Multiple Stressor Exposure, Psychophysiological Stress, and Socioemotional Adjustment. *Child Development* , 73 (4), 1238-1248.

Evans, G. (2004). The environment of childhood poverty. *American Psychologist* , 59, 77-92.

Fish, M. J. (2002). *Early Development of Low-Income Rural Appalachian Children*. Rural Health Monograph Series.

Fisher, J. &. (2002). The Importance of Place in Welfare Reform. The Brookings Institution.

Flaskerud, J. &. (1998). Conceptualizing vulnerable populations and health-related research. *Nursing Research* , 47, 234-239.

Fund, C. D. (2004). Retrieved August 23, 2004, from <http://www.childrensdefense.org/child-research>

Fund, C. D. (2008). *Census Data*. Retrieved June 19, 2007, from <http://www.childrensdefense.org/child-research>

Gibbs, R. (2001). New South, Old Challenges. *Rural America* , 15 (4), 2-6.

Goodman, E. H. (2003). A multi-level analysis of the relationship of SES to adolescent depressive symptoms. *Journal of Pediatrics* , 143, 451-456.

Goodman, E. S. (2003). Quantifying the Public Health Impact of SES on Adolescent Depression and Obesity. *American Journal of Public Health* , 93, 1844-1850.

Goodman, R. C.-W. (2004). *Childhood Traumatic Grief Education Materials*. Retrieved April 5, 2007, from National Child Traumatic Stress Network: [http://nctsn.org/nctsn\\_assets/pdf](http://nctsn.org/nctsn_assets/pdf)

Grahm, C. &. (2000). School-aged children's vulnerability to depression: The role of quality of attachment, maternal mental health, and economic risk. *Development and Psychopathology* , 12, 201-213.

Guo, G. B.-G. (1996). Parents' Labor Force Attachment and Grade Retention among Urban Black Children. *Sociology of Education* , 217-236.

Guo, G. (1998). The timing of the influences of cumulative poverty on children's cognitive ability and achievement. *Social Forces* , 77, 257-288.

Gutterman, N. L. (2009). Parental perceptions of neighborhood processes, stress, personal control, and risk for physical child abuse and neglect. *Child Abuse and Neglect* , 33 (12), 897-906.

- Hakim, R. B. (2000). Medicaid and the health of children. *Healthcare Financing Review* , 22 (1), 133-140.
- Haveman, R. &. (1995). The determinates of children's attainments: A review of methods and findings. *Journal of Economic Literature* , 33, 1829-1878.
- Hawkins, J. C. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin* , pp. 64-105.
- Hendryx, M. (2008). Mental health professional Shortage Areas in Rural Appalachia. *The Journal of Rural Health* , 24 (2), 179-182.
- Hoff, E. (2003). The Specificity of Environmental Influence: Socioeconomic Status Affects Early Vocublary Development Via Maternal Speech. *Child Development* , 74 (5), 1368-1378.
- Huston, A. D. (2001). Work-based anti-poverty progrmas for parents can enhance the school performance and social behavior of children. *Child Development* , 72, 318-336.
- Huttenlocher, J. V. (2002). Language and child syntax. *Cognitive Psychology* , 45, 337-374.
- Jaffe, P. C. (2003). Legal and policy responses to children exposed to domestic violence. *Clinical Child and Family Psychology Review* , 6, 205-213.
- Kelley, B. T. (1997). *In the Wake of Childhood Maltreatment*. Retrieved January 21, 2008, from National Criminal Justic Reference Center: <http://ncjrs.gov/pdffiles1/165257.pdf>
- Kim, S. H. (2000). The impact of family economic hardship and parental commitment on children's outcomes. *Consumer Interest Annual Report* , 469-482.
- Kronick, R. (2000). *Human Services and the Full Service School*. Springfield: Charles C Thomas Publisher.
- Leventhal, T. &.-G. (2004). A randomized study of neighborhood effects on low-income child education outcomes. *Developmental Psychology* , 40, 488-507.

- Leventhal, T. &.-G. (2000). The neighborhood they live in: The effects of neighborhood residence upon child and adolescent outcomes. *Psychological Bulletin* , 126, 309-337.
- Lewis, O. (1966). The culture of poverty. *Scientific American* , 215, 19-25.
- Liaw, F. &.-G. (1994). Cumulative familial risks and low-birth weight children's cognitive and behavioral development. *Journal of Clinical Child Psychology* , 23, 36-372.
- Lichter, D. &. (2001). Poverty and Welfare Among Rural Female-Headed Families before and After PRWORA. *Rural America* , 16, 28-35.
- Linver, M. Brooks-Gunn, J. (2002). An Epidemiology of Neighborhood Poverty. *American Journal of Sociology* , 298-312.
- MacKenzie, D. &. (1997). The Full Service: A Management and Organizational Structure for 21st Century Schools. *Community Education Journal* , 25 (3), 9-11.
- Masten, A. &. (1998). The development of competence in favorable and unfavorable environments: Lessons from research on successful children. *American Psychologist* , 205-220.
- Masten, A. (2001). Ordinary magic: Resilience processes in development. *American Psychologist*, 56, 227-238.
- McLoyd, V. (1998). Socioeconomic disadvantage and child development. *American Psychologist* , 53, 185-204.
- Moffitt, T. &. (2001). Childhood predictors differentiate life-course persistent and adolescence-limited antisocial pathways among males and females. *Development and Psychopathology* , 13, 355-375.
- Murry, L. F.-C. (1996). The impact of postnatal depression and associated adversity on early mother-infant interactions and later infant outcome. *Child Development* , 67 (5), 2512-2526.
- Ono, H. &.-J. (2008). Race, Parental SES, and Computer Use Time outside of school among young American children. *Journal of Family Issues* , 29 (12), 1650-1672.
- Pagani, L. B. (1999). Effects of poverty on academic failure and delinquency in boys: A change and process model approach. *Journal of Child Psychology and Psychiatry* , 40, 1209-1219.
- Paschall, M. &. (1998). Effects of Neighborhood and Family Stressors on African American Male Adolescent's Self-Worth and Propensity for Violent Behavior. *Journal of Consulting and Clinical Psychology* , 134-141.

Persky, V. S. (1998). Relationship of race and SES with prevalence, severity, and symptoms of asthma in Chicago school children. *Annual Allergy Asthma Immunology* , 81, 266-271.

Peterson, S. &. (2001). Effects of poverty and maternal depression on early child development. *Child Development* , 72, 1794-1813.

Pittman, L. &. (2008). Low-income multigenerational households: Variations in family functioning by mother's age and race/ethnicity. *Journal of Family Issues* , 29, 851-881.

Probst, J. L. (2006). Rural-urban differences in depression prevalence: Implications for family medicine. *Family Medicine* , 38 (9), 653-660.

Proffit, A. S. (2004). The Appalachian Model Teaching Consortium: Preparing teachers for rural Appalachia. *The Rural Educator* , 26 (1), 24-29.

Purvin, D. (2003). Weaving a Tangled Safety Net: The Intergenerational Legacy of Domestic Violence and Poverty. *Violence Against Women* , 9 (10), 1263-1277.

Shaw, D. &. (1995). Infant attachment security and maternal predictors of early behavior problems. *Journal of Abnormal Psychology* , 23 (3), 335-357.

Shields, R. &. (2001). Narrative representations of caregivers and emotion dysregulation as predictors of maltreated children's rejection by peers. *Development Psychology* , 37, 321-337.

Small, M. &. (2001). Urban Poverty after the Truly Disadvantaged: The Rediscovery of the Family, the Neighborhood, and Culture. *Annual Review of Sociology* , 27, 23-45.

Smith, J. B.-G. (1998). The young children's cognitive and verbal ability and early school achievement. In G. &-G. Duncan, *Consequences of Growing up Poor*. New York: Russell Sage.

Solantaus, T. L. (2004). Children's Mental Health in Times of Economic Recession. *Developmental Psychology* , 40, 412-429.

Swerdik, M. R. (1999). Full service schools: A partnership between educators and professional in medicine, mental health and social services. *National Association of Secondary School Principals Bulletin* , 83 (611), 72-79.

Vondra, J. (1990). Self-concept, motivation, and competence among preschoolers of maltreating and comparison families. *Child Abuse and Neglect*, 14, pp. 535-540.

Wachs, T. (1992). *The nature of nurture*. Los Angeles: Sage.

Walker, J. &. (1999, December). Full-Service Schools: Forming Alliances to Meet the Needs of Students and Families. *NASSP Bulletin*, 28-37.

Wilson, S. P. (1993). The process of educational and occupational attainment of adolescent females from low-income, rural families. *Journal of Marriage and Family*, 55, 158-175.

Wolfe, C. &. (2002). Contingencies of self-worth and goal directed behavior. In F. Z. Spencer, *Motivated Social Perception*. Hillsdale: Erlbaum.

Zeisemer, C. M. (1994). Homeless children: Are they different from other low-income children? *Social Work*, 39 (6), 658-668.



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