This is to certify that the

thesis entitled

A COST-BENEFIT ANALYSIS OF A CHILD ABUSE
PREVENTION PROGRAM

presented by

Deborah Lisa Abber

has been accepted towards fulfillment
of the requirements for

_____M.A._____degree in _Psychology_

Robert L Caldwell

Major professor

Date _10/9/98_

PLACE IN RETURN BOX to remove this checkout from your record.
TO AVOID FINES return on or before date due.
MAY BE RECALLED with earlier due date if requested.

DATE DUE	DATE DUE	DATE DUE

A COST-BENEFIT ANALYSIS OF A CHILD ABUSE PREVENTION PROGRAM

By

Deborah Lisa Abber

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF ARTS

Department of Psychology

1998

ABSTRACT

A COST-BENEFIT ANALYSIS OF A CHILD ABUSE PREVENTION PROGRAM

By

Deborah Lisa Abber

The United States spends millions of dollars each year to treat children who were abused and/or neglected by their caregivers. Comprehensive child abuse prevention programs may be effective in reducing the incidence of child maltreatment and may be a cost-effective solution to the problems of child maltreatment. A methodology to estimate the costs and benefits of child abuse prevention programs was developed. The methodology was applied to a comprehensive child abuse prevention program in Grand Rapids, Michigan (Kent County Healthy Start) to determine its financial effectiveness during the first year of program implementation. Results indicated that there were no significant differences in reports of child maltreatment to Child Protective Services, the use of medical services, and the use of community services between participants in the intervention group and the comparison group. Cost-benefit comparisons indicated that costs exceeded benefits by approximately 23/1 United States dollars.

In memory of my grandfather

BERTRAM ABBER

ACKNOWLEDGMENTS

TABLE OF CONTENTS

Chapter 1

INTRODUCTION

Child maltreatment has become a serious mental health problem in the United States.

In 1992, of approximately 3 million reports of child maltreatment to child protective

services, 1 million children were substantiated victims of child maltreatment (U.S.

Advisory Board on Child Abuse and Neglect, 1993; U.S. Department of Health and

Human Services [USDHHS], 1994). Each year, approximately 2,000 infants and young

children die from abuse or neglect at the hands of their parents or caregivers (USDHHS,

1994). Many other maltreated children experience physical injuries, cognitive and

linguistic deficits, and emotional, behavioral, and social problems during childhood and

later adulthood (Beitchman et al., 1992; Briere & Elliot, 1994; Cicchetti & Olsen, 1990;

Friedrich & Einbender, 1983; Wekerle & Wolfe, 1996; Wolfe, 1987). Beyond these

negative effects to the lives of maltreated children, our economy suffers as well. Millions

of dollars are spent annually dealing with the consequences of child maltreatment (Bruner,

1996; Caldwell, 1992; Cicchetti & Olsen, 1990; Wekerle & Wolfe, 1996). In 1991, the

resources required to treat maltreated children in the United States, including medical

care, psychological counseling, foster care, and specialized education, were estimated to

be $500 million (National Research Council, 1993, as cited in Wekerle & Wolfe, 1996).

Comprehensive child abuse prevention programs may be effective in reducing the

incidence of child maltreatment (Caruso, 1989; Center on Child Abuse Prevention

Research, 1996; Hardy & Street, 1989; Olds & Henderson, 1989). However, an

insufficient amount of resources is currently available to implement child abuse prevention

programs (Center for Study of Social Policy, 1995; Jerrell & Larsen, 1986; National

Committee for the Prevention of Child Abuse, 1990; Thompson & Wilcox, 1995). The purpose of this paper is to develop a methodology to estimate the costs and benefits of child abuse prevention programs in order to demonstrate that preventing child maltreatment with comprehensive child abuse prevention programs is a cost-effective solution to the problems of child maltreatment. First, previous evaluations of child abuse prevention programs and the problems of securing funding for child abuse prevention programs will be discussed. Then, the advantages and disadvantages of conducting a cost-benefit analysis on child abuse prevention programs are presented and a method for conducting a cost-benefit analysis on child abuse prevention programs is proposed and applied to a child abuse prevention program in Michigan--Kent County Healthy Start. Finally, based on the application of the proposed cost-benefit analysis on Kent County Healthy Start, a revised method for conducting a cost-benefit analysis on child abuse prevention programs is presented and suggestions for future research are given.

Child Abuse Prevention

Several important social and economic changes during the past 20-30 years in the United States, such as changes in the American family structure, the rise in teenage pregnancy, the high unemployment rate, and the decreased involvement with extended family members have put our nation's children at increased risk for maltreatment (Hamburg, 1993). Consequently, members of our society have recognized, acknowledged, and have begun to address the problem of child maltreatment by caregivers (Garbarino, Kosteneny, & Grady, 1993; Wekerle & Wolfe, 1993). The increase in public awareness of the problem of child maltreatment has resulted in numerous research efforts that have identified some of the causes of child maltreatment (Sternberg, 1993).

2

Parents of substantiated victims of child maltreatment tend to be single, poor, alcohol and drug abusers, younger than the average age of caregivers, and involved in violent intimate relationships (USDHHS, 1994). Other factors have been associated with the etiology of child maltreatment, including an inadequate knowledge of child development and child rearing techniques, high levels of parental stress, social isolation, parents with psychological disorders, aggressive and disruptive children, and children with physical problems (Belsky, 1993; Cicchetti & Olsen, 1990; Gaines, Sandgrund, Green, & Power, 1978; Hillson & Kuiper, 1994; Wekerle & Wolfe, 1996). It appears that one factor alone does not cause child maltreatment. Many parent/child characteristics, environmental influences, and social-cultural factors appear to interact and contribute to child maltreatment (Belsky, 1993; Cicchetti & Olsen, 1990; Gaines et al., 1978; Hillson & Kuiper, 1994; Wekerle & Wolfe, 1996).

Recently, child abuse prevention programs that attempt to eliminate or reduce many of these potential risk factors have been implemented (Coie et al., 1993). Few evaluative efforts have been conducted in the area of child abuse prevention (Cicchetti & Olsen, 1990; Starr, 1990). However, current data suggest that extensive and intensive child abuse prevention programs, that work directly with families and target multiple risk factors, are the most effective programs (Cicchetti & Olsen, 1996; Guterman, 1997; Simmons, 1986; Wekerle & Wolfe, 1996). For example, Olds and Henderson (1989) provided four levels of preventative interventions to 400 pregnant women at risk for child maltreatment based age, socio-economic factors, and marital status. These women were randomly assigned to one of four groups. The first group served as the control group and received no intervention. The second group received free prenatal care and well-child medical appointments. The third group received the services provided to the second

group plus nine visits to the home by a nurse during pregnancy. The fourth group received a comprehensive and intensive intervention program, including visits to the home by a nurse until the child reached age two, linkage to community services, social and emotional support, information on parenting strategies, and health education and services. Based on reports of child abuse and neglect to child protective services, results showed that only the fourth group had significantly less instances of child maltreatment when compared to the control group. Nineteen percent of the parents in the control group and four percent of the parents in the fourth group abused their children during the first two years of life. Results are similar for other evaluations of comprehensive child abuse prevention programs (Caruso, 1989; Center on Child Abuse Prevention Research, 1996; Hardy & Street, 1989).

Funding for Child Abuse Prevention

Although the need for prevention programs has been recognized (Bryce, 1988; Coie et al., 1993) and prevention strategies have been found to be effective in reducing child maltreatment, there are limited funds available to implement child abuse prevention programs (Center for Study of Social Policy [CSSP], 1995; Jerrell & Larsen, 1986). Agencies have been created specifically for preventing child maltreatment (National Committee for the Prevention of Child Abuse [NCPCA], 1990); however, funding for these services has been through new funding sources developed in the private sector and not through direct state or federal revenues (Jerrell & Larsen, 1986).

Overall, federal support for all areas of child maltreatment research, including etiology, outcome, treatment, and prevention research has diminished in recent years (NCPCA, 1990; Thompson & Wilcox, 1995). The limited federal funds currently available to control child maltreatment continue to be allocated, more often than not, to treatment

programs (Callahan, 1994; Harper & Balch, 1977; Jerrell & Larsen, 1986; Maynard, 1993a; Starr, 1990). Effective treatments are important for those already in need. However, investing scarce resources in treatment programs will not provide a viable solution to our nation's problem with child maltreatment because the root causes of child maltreatment will not be eliminated. Rather, the greatest potential for reducing the incidence of child maltreatment lies in prevention (Cohen, 1984).

"It is common wisdom among prevention advocates that no disease or social problem has ever been brought under control by providing after-the-fact treatment to the victims of the disease or problem. Preventative, proactive, before-the-fact interventions have, historically, been the only effective way to control or eliminate important diseases. Public health prevention programs to control smallpox and polio are prime examples. In addition to the impressive effectiveness of such preventive interventions, they have been remarkably cost effective--often costing only a small fraction of the expense of treatment" (Caldwell, 1992, p. 3).

Nonetheless, it is difficult to justify funding for prevention. There are more pressures to implement treatment programs for those already in need (Callahan, 1994; Harper & Balch, 1977; Jerrell & Larsen, 1986; Maynard, 1993a; Starr, 1990). Investing scarce resources in the prevention of negative consequences in the future instead of providing interventions to those in present need may seem inefficient, counterintuitive, or even cruel (CSSP, 1995; Jerrell & Larsen, 1986). To the general public, it may not make sense that the long-term cost of prevention may be less than the cost of treatment, especially if the cost of prevention is initially higher than treatment (VanAntwerp, 1971).

In order to convince funders and policy makers that investing in child abuse prevention is the most efficient way to spend limited resources, advocates for child abuse prevention

need to present their case with hard financial data when requesting funds for prevention

programs. Thus, evaluators of prevention programs need to estimate the financial

effectiveness of child abuse prevention programs and determine if prevention is a cost-

effective solution.

<u>The Cost-Benefit Analysis</u>

Some researchers have incorporated the cost-benefit analysis (CBA) technique into

program evaluation. The CBA provides information about the financial gains (benefits) of

a program and the financial expenses (costs) that are required to implement it. First,

program costs and benefits are identified and measured in monetary terms. Then, the

program's effectiveness in producing the benefits is assessed in the program's evaluation

and multiplied by the monetary value of the corresponding benefit. Finally, all of the costs

are divided by all of the benefits to form the cost-benefit ratio, which represents the

productivity of the program (Wortman, 1983; Yates, 1980; 1985; 1994; 1996).

The integration of the CBA into psychological research has provided important

information to the field of psychology. Through the use of the CBA, it has been found

that more expensive programs with similar objectives are not necessarily more effective

programs. For example, Weisbrod (1983) showed that inpatient treatment of individuals

with schizophrenia is more expensive than community care, but is not more effective. This

finding has affected decisions regarding where to place individuals with schizophrenia who

cannot live on their own. Other researchers have used the CBA for similar purposes

(Glass & Goldberg, 1977; Karon & VandenBos, 1976, Knobbe, Carey, Rhodes, &

Horner, 1995; Seigert & Yates, 1980).

In addition, researchers have used the CBA to provide evidence of the economic

advantages of a program's outcome compared to its costs. For example, during the

evaluation of a rehabilitation program for child molesters, Prentky and Burgess (1990) found that this program produced a relatively small change in behavior. However, when these authors conducted a CBA, they found that savings to the economy exceeded the costs of the program. This information provided an economic incentive to implement this program with child molesters that otherwise would have seemed a waste of limited resources. Other researchers have used the CBA for similar purposes (Alfano, Thurstin, & Nerviano, 1987; Barnett, 1993; Deter, 1986; Lewis, Bruiniks, Thurlow, & McGrew, 1988; Rutz, Carlsson, Knorring, & Walinder, 1992; Vinokur, van Ryn, Gramlich, & Price, 1991).

Chapter 2

STATEMENT OF THE PROBLEM

It is important to conduct a CBA on child abuse prevention programs to determine whether child abuse prevention is a cost-effective solution to the problems of child maltreatment. Estimates of the financial effectiveness of child abuse prevention programs could provide advocates of child abuse prevention with the information they need to convince funders to invest limited resources in prevention. However, the CBA comes to the field of psychology with several problems. Each step of the CBA technique in psychological research (i.e., identification of costs and benefits, assessment in the evaluation of costs and benefits, and measurement of costs and benefits in monetary terms) presents difficulties that limit the validity and reliability of the cost-benefit estimate. The problems of conducting a CBA have received little attention in the literature and a standard method that addresses the limitations of conducting a CBA on psychosocial interventions has not been developed.

For the remainder of this section, the problems with each of the steps of the CBA in psychological research will be discussed. Each discussion will be followed by a proposed method that addresses the limitations of the CBA in psychological research and improves the CBA methodology.

Identification of Benefits

Prevention programs typically produce many outcomes that may lead to a number of other indirect outcomes. All of the direct outcomes as well as the indirect outcomes need to be identified and included in the CBA (Wortman, 1983; Yates, 1980; 1985; 1994; 1996). Many of the previous CBAs of intervention programs have identified only the

8

direct outcomes (Alfano, 1987; Deter, 1986; Glass & Goldberg, 1977; Karon & VandenBos, 1976; Knobbe et al., 1995; Seigert & Yates, 1980; Vinokur et al., 1991; Weisbrod, 1983). For example, Vinokur et al. conducted a CBA of a job enhancement program for individuals who were unemployed. The only benefit of this program that was included in the CBA was subject employment. However, there are a number of potential indirect benefits of this program that were not included in the CBA. The purpose of implementing a job enhancement program is not only to increase employment, but also to reduce the number of individuals on public assistance, decrease crime rates, and increase mental and physical well being. Since many important benefits were excluded from the CBA, the validity of their estimate is questionable and there may be a greater economic incentive to implement this type of program than the Vinokur et al. cost-benefit analysis suggests.

In order for the cost-benefit ratio to reflect a valid estimate of a program's productivity, it is critical to identify all benefits of a program. However, it is less clear which indirect benefits may result once the direct benefits are realized. Nonetheless, some researchers have attempted to identify some of the indirect program outcomes (Barnett, 1993; Rutz et al., 1992; Lewis et al., 1988; Prentky & Burgess, 1990). For example, Plotnick (1994) designed a CBA of a drug use prevention program and identified a number of indirect benefits of this type of program, such as less crime, higher earnings, and fewer automobile accidents. However, it is unclear if there were other indirect benefits of this program. Researchers have not described the method used to identify the indirect benefits and have not provided a clear rationale for including and excluding particular indirect outcomes in CBA reports. As a result, researchers of similar programs may not include or acknowledge the same benefits in the CBA, lowering the reliability of

the cost-benefit estimate. Thus, a method to identify indirect benefits needs to be developed.

Proposed method. In order to develop a comprehensive list of direct and indirect benefits for a CBA, researchers should first document the scope of the problem and the program's goals and develop a list of the direct program outcomes. The direct outcomes are typically the stated program goals (e.g., an alcohol and drug abuse prevention program) or the behaviors that are directly increased or decreased as a result of the program's services. Then, the researchers should use the literature to determine the indirect effects that may result when the direct effects are achieved. It is suggested that recent comprehensive review articles that summarize the negative or positive effects of each direct outcomes and that summarize outcomes of previous similar programs be obtained. Then, based on empirical findings, create a list of all the potential indirect benefits that may accrue once the behavior in question is increased or decreased. Finally, describe the method used to identify benefits and state all of the identified benefits in the CBA report.

Identification of Costs

Costs are the resources that support program operation. All of the costs of program implementation need to be identified and included in the CBA (Wortman, 1983; Yates, 1980; 1985; 1994; 1996). Previous CBAs have reported only the costs of program implementation that are paid with program resources (Alfano et al., 1987; Barnett, 1993; Deter, 1986; Glass & Goldberg, 1977; Karon & VandenBos, 1976; Knobbe et al., 1995; Lewis et al., 1988; Prentky & Burgess, 1990; Rutz, 1992; Seigert & Yates, 1980; Vinokur et al., 1991; Weisbrod, 1983). However, for intervention programs, there are a number of other costs of program implementation that are not paid with program resources, such as

donated supplies, rent free space, and volunteer time (Plotnick, 1994; Wortman, 1983; Yates, 1985; 1996). In addition, intervention programs may encourage participants to use other services in an effort to reduce or increase a particular behavior. The use of other services indirectly increases the cost of program implementation. For example, Alfano et al. (1987) conducted a CBA of a treatment program for alcoholics. Participants were provided inpatient treatment for one month and were encouraged to attend Alcoholics Anonymous meetings after discharge. Follow-up contacts were made for eighteen months to assess employment status. The identified costs of implementing this program consisted of the hospital inpatient treatment. The cost of providing Alcoholics Anonymous meetings to participants was not included in the list of program costs or in the CBA. However, this expense, if included in the CBA, would have changed the final CBA ratio.

In order for the cost-benefit estimate to reflect a valid estimate of a prevention program's productivity, it is critical to provide an accurate account of the costs associated with program implementation. The exclusion of costs that are not paid with program resources limits the accuracy of the CBA and inflates the economic incentive to implement a particular program. However, costs that are not paid with program resources are more difficult to identify and a method to identify these costs has not been developed.

Proposed method. To identify all program costs, information regarding the program's expenditures, inkind contributions, and intervention methods needs to be obtained. Information regarding program expenditures may be obtained by requesting from program administrators a copy of the program's expenditures. If a detailed expenditure list is unavailable, then request from administrators the total resources that are used to run the program or the cost for one participant to be involved in the program. In-kind contributions may be more difficult for administrators to determine if this information has

11

not been documented. However, the researcher could ask program administrators if the program receives help from volunteers (Plotnick 1994; Wortman, 1983; Yates, 1985; 1996). If so, request the number of hours that volunteers devote to the program. Then, request from program administrators a list of program costs that are not paid with program resources, including office supplies, office space, or other donations. Then, document the services that participants are encouraged to use that are not provided by the program. This information can be obtained from program administrators or a program employee. This information can also be found in the program's proposal or in documents that are shared with the community describing the program's goals, services, and expected outcomes. Finally, describe the method used to identify costs and state all of the identified costs in the CBA report.

Assessment of Benefits and Costs

In order to estimate the financial effectiveness of a program, it is first necessary to assess program effects for each identified benefit and cost (Plotnick 1994; Wortman, 1983; Yates, 1985; 1996). However, in psychological research, there are several problems related to the assessment of costs and benefits in the evaluation, including when to conduct the evaluation and CBA, how to evaluate benefits and costs that are difficult to assess, and when to plan the CBA.

First, although benefits and costs need to be assessed in the evaluation in order to conduct a CBA, all outcomes of prevention programs may not be realized upon completion of the program. Outcomes of preventative intervention programs typically include both short-term and long-term benefits. Short-term benefits are outcomes that are realized during or immediately after program completion. Long-term benefits are the outcomes that become apparent many years after the intervention has been completed. It

is unlikely that all costs and benefits of prevention programs will be realized during the same time period. Thus, choices need to be made about when to conduct the CBA.

For programs with long-term benefits, the CBA has mainly been conducted during the follow-up study (Alfano et al., 1987; Barnett, 1993; Lewis et al., 1988; Rutz et al., 1992; Prentky & Burgess, 1990; Vinokur et al., 1991). Most or all of the long-term benefits as well as the short-term benefits can be included in the CBA when the CBA is conducted many years after program implementation. Nonetheless, a CBA could also be conducted to assess the financial effectiveness of a program's immediate effects. Information obtained from a CBA conducted in the short-term could provide program administrators with important information about current savings or losses associated with program implementation. A CBA that could provide evidence of short-term savings would be very beneficial to program administrators since they could present data from the CBA to funders in an attempt to secure future funding for the program. Although important long-term benefits would not be included in a short-term CBA, the cost-benefit estimate could reflect a valid estimate of a program's immediate financial effectiveness. In addition, it is important for researchers to repeatedly conduct a CBA over time beginning at program implementation until the long-term benefits are realized in order to establish base-line cost information and chart the changes in the cost-benefit ratio over time. In this way, researchers will be able to determine the approximate point in time that a given program's costs equals its benefits as well as the time period in which significant financial savings are realized.

Next, some benefits and costs of psychological research are difficult or impossible to assess in the evaluation and the true program effect may be unknown. For example, the Prentky and Burgess (1990) CBA of a rehabilitation program for child molesters based the

program evaluation on recidivism rates. Recidivism was defined as at least one charge of a victim-involved sexual offense within five years post treatment. However, the number of victim-involved sexual offenses that the previous offenders actually committed is impossible to determine since sexual offenses are not always reported. In addition, there may be a number of data collection procedures that could be used to assess a particular outcome in the evaluation and different procedures may produce different program effects. As a result, the cost-benefit ratio may differ depending upon which procedure is used to assess program effects. For example, Prentky and Burgess noted that procedures for calculating recidivism vary and that other researchers have defined recidivism as reincarceration. Each data collection method may yield very different reoffense rates and thus, the cost-benefit estimates may differ as well. These assessment difficulties limit the validity and reliability of the cost-benefit estimate.

Finally, since there are many issues to consider when conducting a CBA in psychology and since there are many threats to the validity and reliability of the cost-benefit estimate, the CBA needs to be planned before conducting the evaluation. If a CBA is not adequately planned before the evaluation, then some benefits and costs may not be identified and assessed in the evaluation and some of the strategies, suggested in this paper, to increase the validity and reliability of the cost-benefit estimate can not be considered.

Proposed method. First, for programs with long-term benefits, a CBA should be conducted well after program implementation in order to provide the most accurate estimate of a program's financial effectiveness. However, evaluators should also conduct a CBA during program implementation, immediately after program implementation, and repeatedly over time until long-term benefits can be assessed. Although long-term benefits

14

will not be included in these CBAs, the cost-benefit estimate will reflect the short-term financial effectiveness of the program. As stated above, repeatedly conducting CBAs over time will allow one to chart the course of the cost-benefit ratio and determine the approximate point when a program's costs equal a program's benefits as well as when significant savings begin to accrue. The evaluator will need to specify the time frame of the CBA and acknowledge the potential long-term benefits of the program in the CBA report.

Next, when a benefit is difficult to assess in the evaluation, acknowledge this difficulty in the CBA report so that the reader will be aware that the true program effect is unknown. If a number of data collection procedures have been used to assess a benefit and if the use of different procedures have produced different program effects, the evaluator should include different measures to assess the benefit in the evaluation and conduct different CBAs based on the different effects. A benefit may have been measured in many ways and it may not be feasible for the evaluator to assess the benefit using all previously used procedures. If so, it is suggested that the evaluator assess the benefit using a method that has been found to produce low program effects, intermediate program effects, and high program effects. Since different program effects may be found using different data collection procedures, conduct three CBAs as discussed below.

Finally, if the evaluator conducting a CBA did not adequately plan for the CBA before the evaluation, the evaluator will have to use the information that is available. However, there may be many problems with such a CBA and the limitations of the analysis should be noted in the CBA report.

Measurement of Benefits and Costs

All benefits and costs need to be expressed in monetary terms in order to conduct a CBA (Plotnick 1994; Wortman, 1983; Yates, 1985; 1996). Benefits of prevention programs are typically not monetary gains and thus, most benefits need to be converted into monetary terms (Plotnick 1994; Wortman, 1983; Yates, 1985; 1996). Some benefits, though, are virtually impossible to quantify (e.g., self-esteem) and cannot be included in the CBA (Plotnick 1994; Wortman, 1983; Yates, 1985; 1996). The exclusion of important immeasurable benefits from the cost-benefit estimate lowers the validity of the cost-benefit estimate and presents a serious limitation to the CBA technique in psychological research.

However, many benefits of prevention programs can be indirectly measured in monetary terms (Plotnick 1994; Wortman, 1983; Yates, 1985; 1996). In previous CBAs, monetary values for each benefit and cost have been obtained from one source (Alfano et al, 1987; Barnett, 1993; Deter, 1986; Glass & Goldberg, 1977; Karon & VandenBos, 1976; Knobbe et al, 1995; Lewis, 1988; Prentky & Burgess, 1990; Rutz, 1992; Seigert & Yates, 1980; Vinokur et al., 1991; Weisbrod, 1983). For some benefits, there may be only one straightforward way to assign monetary values. For example, the goal of the Vinokur et al. CBA was to increase subject employment and the number of subjects that gained employment following the intervention was determined in the evaluation. The subject's salary was used to represent the value of the outcome, employment, and this information was obtained from each program participant two years after the intervention.

However, there may be multiple estimates one could use to value some benefits and costs and thus, decisions need to be made as to where to obtain this information. Choices in data collection procedures for measuring benefits and costs will ultimately affect the validity and reliability of the cost-benefit ratio and researchers have not provided a

16

rationale for their choice in data collection procedures when multiple sources exist (Barnett, 1993; Prentky & Burgess, 1990; Rutz et al., 1992). For example, one benefit that was reported in the Barnett CBA was a decreased involvement in the criminal justice system. Barnett provided a cost estimate of this benefit in the CBA and reported that the estimate was obtained from national data on the cost for an arrest, incarceration, and probation supervision. However, the monetary value of this benefit may have been different if the cost for an arrest, incarceration, and probation supervision was obtained for the state in which the intervention took place, rather than for the entire country. If another evaluator of a similar program obtains cost estimates for the same benefit using different data collection procedures, then the final cost-benefit estimates may be very different. Thus, in order to ensure the validity and reliability of the cost-benefit estimate, a standard procedure needs to be developed when there are several ways to measure benefits and costs in monetary terms.

Proposed method. When there are several ways to measure variables in monetary terms, the overall goal for researchers is to provide the most accurate account of the costs and benefits in monetary terms. It is suggested that if a monetary value for a particular benefit or cost can be obtained from several sources, an estimate from each source be obtained and three CBAs based on the lowest, middle, and highest estimates be performed, as discussed below. If there are several estimates within a source, it would be best to obtain all estimates within that source. For some benefits and costs, though, many estimates may exist within one source and it may not be feasible for the evaluator to collect all of the estimates. In this case, an option is to randomly sample three estimates within a source and perform three CBAs based on the lowest, middle, and highest estimates, noting that they may not represent the most extreme values possible. After this

process for each benefit and cost that are difficult to measure in monetary terms is completed, the evaluator may have several monetary estimates for each benefit and cost as well as several program effects for each benefit and cost as discussed above. It is suggested that three CBAs then be performed. First, conduct a CBA with the lowest monetary values for the benefits, the highest monetary values for the costs, and the lowest program effects for the benefits. This estimate will reflect the conservative cost-benefit estimate. Then, conduct a CBA with the intermediate monetary values for the benefits and costs and the intermediate program effects. This estimate will reflect the middle ground cost-benefit estimate. Finally, conduct a CBA with the highest monetary values for the benefits, the lowest monetary values for the costs, and the highest program effects for the benefits. This estimate will reflect the optimistic cost-benefit estimate. With this approach, the researcher can be more confident that the true value of the cost-benefit ratio has been captured and falls between the conservative and optimistic estimates. In addition, acknowledge all immeasurable benefits and costs in the CBA report in order to provide a comprehensive view of the associated costs and benefits (Plotnick 1994; Wortman, 1983; Yates, 1985; 1996) and describe data collection procedures for the measurement of benefits and costs in the CBA report.

Although there are some problems adapting the CBA for child abuse prevention programs, as discussed above, the proposed cost-benefit methodology addresses the limitations of the CBA technique in psychological research. For the remainder of this paper, I describe the application of this methodology to a child abuse prevention program in Michigan. The proposed CBA technique was tested in order to uncover any problems with the proposed CBA methodology that researchers may encounter that were not addressed in the above section as well as to determine base-line cost information for the

18

prevention program. I then revise the CBA methodology following its application. The CBA presented below focused on outcomes of a child abuse prevention program for child participants and was based on the child participants' change in the use of several services after one year of program involvement. The economic savings or losses associated with the change in child service usage after one year of program involvement are demonstrated in the CBA.

Chapter 3

METHOD

The Kent County Healthy Start Program

The CBA was conducted on a child abuse prevention program in Grand Rapids,

Michigan--Kent County Healthy Start (KCHS). KCHS is a comprehensive child abuse

prevention program designed to promote healthy family functioning and child

development. The program is intended to empower families at risk for child maltreatment

by offering them several services early in their parenting years. Each family is provided a

home visitor that works directly with them for up to five years.

The Kent County Healthy Start Evaluation

The evaluation of KCHS is a longitudinal study with an experimental design. Families

in the KCHS program are compared to families in a control group who do not receive the

KCHS intervention. Random group assignment was designed to be achieved through a

screening procedure at Butterworth Hospital in Grand Rapids, Michigan. All mothers

were to be approached by a social worker in Butterworth Hospital after giving birth and

were to be asked questions about a variety of health risk factors, some of which have also

been identified as risk factors for child abuse. Mothers would be considered at-risk for

child maltreatment if two or more risk factors were identified during the interview.

Exceptions to this classification system were made by the KCHS program coordinators

when a single risk factor was considered to be highly indicative of abuse potential (e.g.

previous history of abuse or neglect, or mother under 18 years of age with no support

system) or when cumulative risk factors were not considered to be indicative of

abuse potential (e.g. overweight or underweight and smoking). At-risk mothers were

intended to be recruited into the control and experimental groups by the same screener, using the same criteria. Cases were supposed to be assigned to the experimental or control group in blocks, based on the capacity of respective staff to process each referral. Data collection for each family in the experimental and control group would then take place at yearly intervals beginning shortly after group assignment.

Participants

Although group assignment was designed to be randomized in order to ensure group equivalency at study entry, the screening procedure was violated by allowing families into the intervention group through other referral routes, while not gaining similar participation in the comparison group from these referral routes. As a result, subjects in the experimental and comparison groups present significant differences at study entry that favor subjects in the comparison group (see Table 1). Group differences were evident on participant race and family income. Group differences were also evident on the Parenting Stress Index (Abidin, 1990), with higher scores indicating greater levels of stress.

Because the two groups were not equivalent on all variables before the program was implemented, any differences that are found between the groups post treatment cannot be fully attributed to the KCHS program. Evaluators of child abuse prevention programs have several options for equating groups so that program effectiveness can be determined. A first option is to compare participants to themselves across time, noting whether members of each group changed at the same or different rate. However, with this strategy, comparisons between groups on outcome variables would not be made and since the CBA relies on group comparisons, the CBA could not be conducted. A second strategy is to control for original group differences statistically by adjusting group means

Table 1

Maternal Characteristics by Group at Study Entry: Percentages and Means with
Standard Deviations in Parentheses

Variable	Intervention[a]	Comparison[a]	p[b]
Age	23.36 (6.00)	23.83 (5.10)	.59
Education	11.01 (2.49)	11.59 (2.30)	.12
Marital Status			.26
Single	68%	63%	
Married	30%	36%	
Divorced	2%	1%	
Race			.04
Caucasian	42%	59%	
African American	20%	27%	
Hispanic	26%	7%	
Other	12%	7%	
Income			.01
< $15,000	49%	44%	
$15,000-24,000	29%	18%	
> $24,000	9%	38%	
Missing	13%	0%	
Parenting Stress Index	249.57 (41.57)	219.37 (38.04)	.001

[a]Intervention N = 163, Comparison N = 72
[b]p-values based on t-test for means, chi-square for percentages.

at study entry and eliminating baseline differences, before conducting comparisons between groups after one year of involvement. With this strategy, all participants are included in the analysis, regardless of originial group differences. However, this strategy poses a problem if the evaluation requires that subject names be used to search official or public records as part of the evaluation of program effectiveness, since the members of each group are not equivalent on characteristics at study entry. A third strategy is to include only the control and experimental subjects who have similar characteristics on pretest measures in the analyses. This strategy reduces the number of subjects previously in the evaluation, but ensures the equivalency of groups at study entry and allows the researcher to determine the names of subjects if record searching is part of the evaluation. Evaluators conducting a CBA that involves using subject names to search official records, such as criminal justice system records or child protective service reports, as in the KCHS CBA, are limited to using the last strategy for data analysis.

Subjects who completed year 1 data collection by December 1997 and who had similar background characteristics at study entry were included in the KCHS CBA for year 1. Groups were equated by restricting the range of scores on the Parenting Stress Index to moderate to low levels of stress. A total of 38 families in the intervention group and 41 families in the comparison group were included in the CBA and background characteristics for these participants are presented by group in Table 2. No significant differences were found between members of these groups at year 1 after limiting the Parenting Stress Index. As stated above, although equating groups meant not using the entire intervention sample, this method allowed two groups that were equivalent at study entry to be compared at the end of year 1.

Table 2

Maternal Characteristics of Equated Subjects by Group at Study Entry: Percentages and Means with Standard Deviations in Parentheses

Variable	Intervention[a]	Comparison[a]	p[b]
Age	24.09 (4.93)	24.80 (5.33)	.56
Education	11.83 (2.51)	12.04 (1.69)	.69
Marital Status			.97
Single	58%	60%	
Married	39%	38%	
Divorced	3%	2.5%	
Race			.80
Caucasian	53%	61%	
African American	13%	18%	
Hispanic	17%	11%	
Other	17%	11%	
Income			.56
< $15,000	44%	49%	
$15,000-24,000	24%	18%	
> $24,000	20%	33%	
Missing	12%	0%	
Parenting Stress Index	211.27 (29.46)	202.30 (31.72)	.20

[a]Intervention N = 38, Comparison N = 41
[b]p-values based on t-test for means, chi-square for percentages.

<u>Identification of Benefits</u>

The goal of KCHS is to decrease child abuse and neglect by caregivers and ensure the healthy development of KCHS children. Each family participating in KCHS is assigned a home visitor who provides social and emotional support, parenting and child development education, and outreach to community resources when needed. The home visitor also encourages preventative health care for the children in KCHS (i.e. childhood immunizations). These services, if effective, will reduce child maltreatment and improve the health and development of the child participants. The above variables represent the direct outcomes of KCHS for the child participants.

In order to identify the potential indirect outcomes of KCHS for the child participants, I obtained a recent review article on the effects of child maltreatment (Cicchetti & Toth, 1995), the effectiveness of child abuse prevention programs (Guterman, 1997), and the effects of inadequate postnatal health care (Peter, 1992).

The outcomes that have been associated with child maltreatment include physical injuries (e.g., bruises, burns, broken bones, failure to thrive, and gynecological problems), social problems (e.g., social isolation, compulsive compliance, and avoidance of peers, adults, and parents), emotional problems (e.g., depression, anxiety, and low self-esteem), behavioral problems (e.g., aggression, truancy, delinquency, and running away from home), cognitive and linguistic deficits (e.g., poor academic performance, low IQ, low level of moral reasoning, and delayed language development), and self-destructive behaviors (e.g., suicide, alcohol and drug abuse, and prostitution). Preventative childhood health care has been found to prevent numerous physical illnesses and diseases including diphtheria, whooping cough, tetanus, polio, influenza, measles, mumps, and rubella.

Identification of Costs

Costs of KCHS include all of the resources required to run the KCHS program. Families involved in KCHS are provided services from one of three different organizations and each organization is allotted a specific amount of financial resources each year to support program implementation. Each organization is also provided with a number of in-kind contributions from the community to help with program implementation, that have been documented by program administrators, including volunteer time, needed supplies for the KCHS families, and additional financial resources.

Participants of KCHS are encouraged to use several community services. It is possible that because of their involvement with the KCHS program, the participants will use other community services less often than the control group participants. Thus, community service usage would be a benefit to the program. However, since the program encourages families to use other programs, the KCHS participants may use them more often. Community service usage would then be a cost of the KCHS program. Since community service usage is an outcome of the KCHS program that could produce monetary savings or losses, this variable will be presented in the outcome section of the results and not in the cost section.

As stated above, KCHS also encourages participants to have their children immunized. Being fully immunized will likely provide long-term benefits to the KCHS children. The increase in immunizations is a cost attributable to the program. Similar to community service use, all outcomes of KCHS that may produce savings or losses will be presented together and all of the costs specifically attributable to the KCHS operation will be presented together. The final cost-benefit estimate will be the same in either case.

<u>Assessment of Benefits and Costs</u>

The KCHS benefits include both short-term and long-term outcomes. Participants in the KCHS evaluation have currently received services for one full year. Thus, the cost-benefit ratio will be an estimate of the financial effectiveness of KCHS for the first year of program involvement and will provide a base-line estimate of the costs and benefits. Direct and indirect outcomes and costs from the above lists that are applicable to a child age one or younger, include child maltreatment, physical health, use of community child services, physical injuries, childhood immunizations, program expenditures, and in-kind contributions from the community to KCHS.

The true rate of child maltreatment among KCHS participants is impossible to determine in the evaluation. The only explicit outcome measure of child maltreatment that has been used by prevention programs is child protective service reports (Guterman, 1997). However, reports to child protective services have been found to have a low base rate, even among high-risk families (Guterman, 1997). Thus, there is a low probability of finding program effects using only this data collection procedure. Researchers have included other proxy measures to assess child maltreatment including observational measures of parent-child interactions, self-report measures of parenting attitudes, and the Child Abuse Potential Inventory (CAP; Milner, 1986). These methods to assess child maltreatment have been found to produce varying results. Fifty percent of evaluations using clinical ratings of parent-child interactions, thirty percent of evaluations using reports to child protective services, and zero percent of evaluations using the CAP to assess child maltreatment have found significant program effects (Guterman, 1997). Since several procedures have been used to assess maltreatment with varying success, the KCHS evaluation has assessed child maltreatment using several methods as well (i.e., reports to

child protective services, clinical ratings of parent-child interactions, and the CAP).

In order to assess the health of KCHS children, the experience of physical injuries, and the number of immunizations received during the first year of program involvement, participants are asked to complete the Pediatric Record Review. The Pediatric Record Review is a self-report measure of child health care utilization that elicits information regarding the number and type of illnesses, injuries, and immunizations and the number of doctor visits, emergency room visits, and hospitalizations KCHS children have had during the first year of program involvement. The use of a self-report measure of health care utilization does present some limitations to the validity of the results. However, previous evaluations of child abuse prevention programs that have collected this information have used similar data collection procedures (Center on Child Abuse Prevention Research, 1996; [Gray, Cutler, Dean, & Kempe, 1979; Huxley & Warner, 1993; Infante-Rivard et al., 1989; Larson, 1980], as cited in Guterman, 1997)

In addition, parents are asked to complete a self-report measure of their use of community services for their children in Grand Rapids, including the Women Infant Children program (WIC) and Food Pantries, which provide children ages 0 to 1 with packages of needed food and supplies. Three parent education and child development programs that provide in home services to families with children ages 0 to 1, Project Focus, Early On, and Even Start are also included on the list of community services.

Measurement of Benefits and Costs

Each of the benefits that are not expressed in monetary terms may be converted to monetary terms by defining each benefit in terms of the increase or decrease in service usage by child participants. Two of the three measures of child maltreatment, clinical ratings of parent-child interactions and the CAP, are not measurable in monetary terms

and cannot be translated into service usage. Child protective service reports, however, can be measured in monetary terms.

Child protective service reports. The number of investigations of child maltreatment during year 1 in the intervention and comparison groups was collected in the evaluation. In Michigan, child maltreatment investigations are performed by the Family Independence Agency (FIA). The FIA has several functions including the investigation of alleged abuse or neglect, the management of family welfare, Medicaid and food stamp distribution, as well as a number of other services. The cost of child protective service reports was obtained from the FIA information officer and was based on staff costs for the investigation of child maltreatment. The FIA information officer had information regarding the number of investigated cases of child maltreatment in 1996, the number of workers that performed the investigations in 1996, and the average salary for these workers in 1996 for the state of Michigan. Statistics for each county was not available. I compared the intervention and comparison groups for child protection service reports. The total dollar value for this service in the comparison group was subtracted from the total dollar value for this service in the intervention group. Since there were more subjects in the comparison group, this calculation was weighted. The result of this calculation was added to the benefit side of the cost-benefit ratio.

Use of medical services. The physical health of KCHS children and the experience of physical injuries can be measured in monetary terms by estimating the cost of medical services for illnesses and injuries. As discussed above, the number of doctor visits, emergency room visits, and hospitalizations that KCHS children have had during the first year of program involvement was collected. The cost of these medical services was obtained according to participant health insurance. The type of health care coverage

families used during year 1 was collected in the evaluation.

Because the CBA was not fully planned before the evaluation, the specific medical reasons for the medical services is too vague and limited to obtain specific prices for each health concern. And, the procedures that were used to treat the child as well as the outcome of the medical concern had not been collected. Thus, estimates were obtained based on the cost of a basic doctor's visit, emergency room visit, and one night hospitalization.

The total number of doctor visits, emergency room visits, and hospitalizations in the intervention group was subtracted from the total number in the comparison group. Since there were more subjects in the comparison group and several subjects in both groups had missing data, this calculation was performed using weighted estimates of the results based on 41 participants. The result of these calculations were multiplied by a weighted cost estimate of each service based on health care coverage and then added to the benefit side of the cost-benefit estimate.

A total of 64% of participants used Medicaid, 7% of the participants did not have health insurance, and 29 % of the participants had an unspecified health insurance plan. Thus, 64 % of the services were multiplied by Medicaid estimates for the cost for one well-child visit, one emergency room visit for an infant, and one night hospitalization for an infant. Medicaid prices were available in government documents at the Michigan State University library that listed prices and rates for Medicaid, such as the Medicaid fees and the Medicare fee schedule (Norton, 1995).

Then, 7 % of the medical services were multiplied by cost estimates that individuals with no insurance would pay. First, the fee for a doctor's visit was obtained. I randomly chose three pediatricians from Ameritech's yellow pages for Grand Rapids, MI based on a

table of random numbers. I obtained estimates from Kent Pediatrics, Western Michigan Pediatrics, and Forest Hills Pediatrics. I called each office and requested the cost for a standard doctor's visit for an infant age one or younger. Next, the fee for an emergency room visit and hospitalization was obtained. The standard fee for an emergency room visit without services and the standard fee for a one night hospitalization without services was obtained from three hospitals in Kent County, because information regarding the place in which participants received medical services was not collected in the KCHS evaluation. The three hospitals were Butterworth Hospital, St. Mary's Hospital, and Blodgett Memorial Medial Center. Butterworth Hospital and St. Mary's Hospital are large metropolitan hospitals in Grand Rapids, MI in which participants of KCHS were recruited. The third hospital was randomly chosen from Ameritech's yellow pages for Grand Rapids, MI based on a table of random numbers. For the 29% who have health insurance, the cost for medical services is the same as the cost without health insurance. Thus, I used the same cost estimates that I obtained from the three physicians and three hospitals. Health insurance companies can provide information regarding the maximum reimbursement allowed for each medical service before a co-payment is necessary on the part of the patient. However, unlike Medicaid, health insurance companies do not have set prices for particular services.

Childhood immunizations to prevent diseases can be measured in monetary terms. The number and type of immunizations children have received were collected in the evaluation. During the first year of life, an infant should have three diphtheria, tetanus, and pertussis (DPT) vaccinations, two polio vaccinations, and one tuberculosis (TB) test (Peter, 1992). The total number of each vaccination in the intervention group was subtracted from the total number of each vaccination in the comparison group. Because there were more

subjects in the comparison group and several subjects in both groups had missing data, this calculation was performed using weighted estimates of the results based on 41 participants.

The result of each of these calculations was multiplied by a weighted cost estimate of each vaccination based on participant health coverage as discussed above. The result of these calculations was added to the benefit side of the cost-benefit ratio. A total of 64% of the vaccinations was multiplied by a cost estimate based on Medicaid rates, 29% of the vaccinations was multiplied by a cost estimate based on health insurance rates, and 7% of the vaccinations was multiplied by a cost estimate based on rates for individuals without health insurance.

In Kent County, individuals without health insurance and individuals on Medicaid receive free vaccinations from the Kent County Health Department. The health department purchases the vaccinations from the manufacturer Pasteur Merieux Connaught. I called a sales representative of this manufacturer and obtained the price for each vaccination. Thus, 86.3 % of the immunizations was multiplied by the cost estimate obtained from this manufacturer. For the 13.7 % who have health insurance, I obtained cost estimates from three physicians. I called each of the three physician offices listed above and requested estimates for the cost charged to insurance companies for one DPT, one polio vaccination, and one TB test.

Use of community services. The use of community child services can be measured in monetary terms. The community services stated above provide valuable resources to children in need. However, these services typically do not charge families for their services. An estimate of the cost for one child to be involved in each of the organizations was requested from each organization. The total cost for community services in the

intervention group was subtracted from the total cost in the control group. Because there were more families in the comparison group and several subjects had missing data, this calculation was performed using weighted estimates of the results based on 41 participants. The result of this calculation was added to the benefits side of the cost-benefit ratio.

Program costs. Program costs and the value of in-kind contributions were estimated by the KCHS program coordinator. The elimination of subjects through the matching strategy, discussed above, to equate groups required that the cost for one family to be involved in the KCHS program for one year be estimated. This estimate was multiplied by 41 families and added to the cost side of the cost-benefit estimate. Although there were 38 participants in the intervention group, in order to equate the number of subjects in the intervention and comparison groups, all analyses were based on 41 families.

Chapter 4

RESULTS

Data from the intervention and comparison groups at the end of year 1 were compared

using a series of T-tests and chi-squares on the variables necessary for the CBA (i.e., child

protective service reports, health care usage, and community service usage). No

statistically significant findings were found. The KCHS program effects are presented in

Table 3. Previous CBAs, discussed in the introduction, have included in the CBA only the

statistically significant effects. Choosing to include only the statistically significant effects

or all of the outcomes, regardless of the significance tests, greatly alters the final cost-

benefit estimate.

Including only statistically significant findings in the CBA of child abuse prevention

programs increases the likelihood that meaningful differences were detected and that these

differences will likely be revealed in other evaluations of child abuse prevention programs.

Using statistically insignificant effects in the CBA lowers the validity of the cost-benefit

estimate. Statistically insignificant effects may fluctuate from positive to negative

outcomes between similar programs and it is uncertain whether these results are

meaningful and not due to chance. Results that do not reach statistical significance may be

meaningful and replicable, though, as they may represent a small effect size that was not

detected. Programs with small effect sizes, even those that do not reach statistical

significance, may still have practical significance to society in terms of the monetary

effects of the program. Each difference that is found between groups on variables in a

CBA represents a monetary value that is interpreted as either a gain or a loss due to the

Table 3

Program Effects Related to Economic Outcomes by Group at Year 1[a]

Variable	Intervention	(N)	Comparison	(N)	p[b]
CPS reports	6	(38)	2	(41)	.15
Medical Services					
Well-child visits	94	(26)	169	(39)	.07
Emergency room visits	43	(32)	35	(39)	.41
Hospitalizations	15	(32)	3	(39)	.15
Immunizations					
DPT	109	(33)	109	(36)	.18
Polio	87	(32)	88	(34)	.46
TB test	18	(34)	12	(36)	.10
Community services					
WIC	23	(35)	24	(40)	.64
Project Focus	0	(35)	1	(40)	1.00
Early On	1	(35)	1	(40)	1.00
Even Start	0	(35)	1	(40)	1.00
Food Pantries	5	(31)	3	(40)	.28

[a]Results are expressed as counts.
[b]p-values based on t-test for medical services and immunizations and chi-square for CPS reports and community services.

program. As a result, programs can have profound monetary consequences regardless if statistically significant results are revealed. However, even if monetary outcomes are found and these outcomes are meaningful to society, these outcomes might not be replicable since the effects were not statistically significant.

Although the KCHS program did not produce statistically significant effects, for purposes of illustration of the proposed CBA technique and to establish base-line cost information for the KCHS program, the results of the CBA using the non-significant effects are presented below. However, the reader should be aware that the results of the CBA may not generalize to other child abuse prevention programs. As stated above, all estimates are weighted due to the inequality of subjects in the intervention and comparison groups.

Monetary Values for Benefits

Child protective service reports. Official records of the FIA indicated that there were more investigations of child abuse in the intervention group than in the comparison group, as presented in Table 3. The effects of the KCHS program on child protective service costs were estimated by using staff costs for the investigation of child maltreatment. Using staff costs only, the FIA spent $21,875,000 on 76,513 investigations of child abuse in 1996. Each investigation of child abuse was estimated to be $286 (see Table 4 for list of monetary values for benefits and costs). Multiplying the cost of an investigation by the weighted difference in investigations between groups yields $1,278.42. The participants in the KCHS program cost society $1,278.42 for investigations of child abuse and this amount was subtracted from the benefits side of the cost-benefit estimate (see Table 5 for list of monetary gains and losses based on weighted effects).

36

Use of medical services. Responses on the Pediatric Record Review indicated that there were more well-child visits in the comparison group than in the intervention group (see Table 3). The financial effects of the KCHS program on pediatrician visits were estimated by using the cost for one well-child visit weighted by participant health care coverage (i.e., Medicaid, private health insurance, and no insurance).

Based on the Medicaid fee schedule regarding the set price for services for individuals who belong to Medicaid, which Medicaid reimburses physicians with no co-payment required by members, the cost of one well-child visit for an infant age 0-1 is $21 (Medicaid fee code: 99213). Physicians charge individuals who are not on Medicaid and who have their own private health insurance or have no insurance the same amount. Because there are numerous physician's offices in Grand Rapids, three pediatricians were randomly chosen and the costs given for one well-child visit for an infant age 0-1 were 42, 45, and 49 dollars (see Table 4). Because three estimates were selected and all estimates for well-child visits (emergency room visits, hospitalizations, and costs for immunizations) in Grand Rapids were not obtained, it is likely that these values do not represent the most extreme monetary estimates of this benefit.

A total of 64% of the participants have Medicaid and 36% of the participants have private health insurance or no insurance. Each of these percents were multiplied by the weighted difference of well-child visits between groups and then by their respective dollar values and added together. This calculation was performed using each of the physician's estimates. The low, middle, and high estimates of savings due to the KCHS program are $840.80, $872.60, and $914.99, respectively, in costs for well-child visits (see Table 5).

Responses on the Pediatric Record Review indicated that there were more emergency room visits in the intervention group than in the comparison group (see Table 3). The

Table 4

Monetary Values of KCHS Benefits and Costs

Variable	Monetary Estimate	Low Estimate	High Estimate
CPS reports	$286/investigation		
Medical Services			
Well-child visit[a]	$21/visit		
Well-child visit[b]	$45/visit	$42/visit	$49/visit
Emergency room visit[a]	$30.07/visit		
Emergency room visit[b]	$58/visit	$45/visit	$70/visit
Hospitalization	$440/night	$358/night	$480/night
Immunizations			
DPT	$8.65/vaccine		
DPT[b]	$15/vaccine	$12/vaccine	$24/vaccine
Polio	$15.75/vaccine		
Polio[b]	$21/vaccine	$20/vaccine	$28/vaccine
TB test	$1.60/vaccine		
TB test[b]	$12/vaccine	$10/vaccine	$13/vaccine
Community services[c]			
WIC	$1129/year		
Project Focus	$4500/year		
Early On	$796/year		
Even Start	$2000/year		
Food Pantries	$99/year		
KCHS	$3907.33/year		

[a]Monetary estimate based on Medicaid fees for services.
[b]Middle, low, and high estimates based on three randomly selected physician fees.
[c]Monetary estimates represent cost for one family.

financial effects of the KCHS program on emergency visits were estimated by using the cost for one emergency room visit weighted by participant health care coverage (i.e., Medicaid, private health insurance, and no insurance).

Based on the Medicaid fee schedule, the cost of one emergency room visit for an infant is $30.07 (Medicaid fee code: 99283). Individuals who have their own private health insurance or have no insurance are charged the same price for an emergency room visit by hospitals. Three hospitals in Grand Rapids were selected and the costs given for one emergency room visit for an infant were 45, 58, and 70 dollars (see Table 4).

A total of 64% of the participants have Medicaid and 36% of the participants have private health insurance or have no insurance. Each of these percents were multiplied by the weighted difference of emergency room visits between groups and then by their respective dollar values and added together. This calculation was performed for each of the hospital estimates for emergency room visits. The low, middle, and high estimates of costs to society due to the KCHS program are $648.28, $733.89, and $812.90, respectively, in costs for emergency room visits (see Table 5).

Responses on the Pediatric Record Review indicated that there were more hospitalizations in the intervention group than in the comparison group. The financial effects of the KCHS program on hospitalizations were estimated by using the cost for one night hospitalization weighted by participant health care coverage (i.e., Medicaid, private health insurance, and no insurance).

Based on the Medicaid fee schedule, the cost of one night hospitalization for an infant varies by procedure and no prices are available for the cost of a room in pediatrics without procedures. Medicaid reimburses up to $2,500 for the costs involved in a one night hospitalization. Thus, the use of the actual costs, if below this amount, will yield a more

accurate estimate. Individuals who are not on Medicaid and who have their own private health insurance or have no insurance are charged the same price for a one night stay in the hospital. Three hospitals in Grand Rapids were selected and the costs given for one night hospitalization room in pediatrics without services for an infant were $358, $440, $480. The weighted difference of hospitalizations between groups was multiplied by each of the hospital estimates. The low, middle, and high estimates of the costs to society as a result of the KCHS program are $5,753.06, $7,070.80, and $7,713.60, respectively in hospitalization costs.

Responses on the Pediatric Record Review indicated that there were more DPT vaccinations, polio vaccinations, and TB tests in the intervention group than in the control group (see Table 3). The financial effects of the KCHS program on immunizations were estimated by using the cost for each of the three vaccinations weighted by participant health care coverage (i.e., Medicaid, private health insurance, and no insurance).

Individuals in Kent County without health insurance and individuals on Medicaid receive free vaccinations from the Kent County Health Department. The health department purchases the vaccinations from the manufacturer Pasteur Merieux Connaught and the cost of vaccinations was obtained from this manufacturer. Individuals who have their own private health insurance are charged a higher price by physicians if they receive them in the physician offices. The same three physicians stated above were asked the cost charged to insurance companies for each of the three immunizations (see Table 4 for list of monetary values for the immunizations).

A total of 71% of the participants have Medicaid or no insurance and 29% of the participants have a private health insurance. Each of these percents were multiplied by the weighted difference between groups of each immunization and then by their respective

Table 5

Weighted Program Effects by Group and Monetary Values of Program Effects at Year 1

Variable	(WC)[a]	(WI)[a]	(WC-WI)($)[b]	(WC-WI)(low$)	(WC-WI)(high$)
CPS reports	2	6.47	- $1278.42		
Medical services[c]					
Well-child visits	177.67	148.23	$872.60	$840.80	$914.99
Emergency room	36.80	55.09	- $733.89	- $648.29	- $812.90
Hosptitalizations	3.15	19.22	- $7070.80	- $5753.06	- $7713.60
Immunizations[c]					
DPT	124.14	135.42	- $118.35	- $108.53	- $147.79
Polio	106.12	111.47	- $92.41	- $90.86	- $103.27
TB test	13.67	21.71	- $37.11	- $32.45	- $39.44
Community services					
WIC	24.60	26.94	- $2641.86		
Project Focus	1.03	0.00	$4635.00		
Early On	1.03	1.17	- $111.44		
Even Start	1.03	0.00	$2060.00		
Food Pantries	3.08	6.61	- $349.47		
KCHS	0	41	- $160,200.53		
Total Costs			$172,634.28	$171,214.91	$173,398.72
Total Benefits			$7567.60	$7535.80	$7609.99

[a](WC) weighted results for control group, (WI) weighted results for intervention group.
[b](WC - WI)($) control - intervention weighted results multiplied by monetary estimate. Calculation equals monetary value for program effect.
[c]Three values given were weighted by participant health care coverage and multiplied by three randomly selected estimates of the variable.

dollar values and added together. This calculation was performed for each of the physician's estimates. The low, middle, and high estimate of the costs to society as a result of the KCHS program are $231.84, $247.87, and $290.50, respectively, in total costs for immunizations.

Use of community services. Self-report measures of community service usage indicated that participants increased their use of WIC, Early On, and Food Pantries, and decreased their use of Project Focus and Even Start. The financial effects of the KCHS program on community service usage were estimated by inquiring from each of these agencies the resources used for one child/family to participate in the program for one year. The weighted difference between groups of each community service usage was multiplied by their respective dollar values. The KCHS program saved society a total of $3592.23 in costs for other community service use.

Monetary Value for Costs

Based on the total resources and in-kind contributions required to run the KCHS program for one year and the number of families served in one year, the coordinator of KCHS estimated the cost for KCHS for one family to be $3,907.33. Multiplying this figure by 41 participants yields $160,200.53.

The Cost-Benefit Ratio

The total dollar value for each of the program outcomes is presented in Table 5. For the costs and benefits that more than one estimate was obtained, low, middle, and high estimates are presented. The final step in the CBA is to sum all of the costs and all of the benefits for each of the low, middle, and high figures. To obtain the conservative cost-benefit estimate, the highest values of the costs were divided by the lowest values of the benefits, yielding the ratio 23.01/1. That is, for every 23.01 dollars spent, 1 dollar was

saved as a result of the program. To obtain the middle ground cost-benefit estimate, the middle estimates of the costs were divided by the middle estimates of the benefits, yielding 22.81/1. To obtain the optimistic cost-benefit estimate, the lowest values of the costs were divided by the highest values of the benefits, yielding the ratio 22.50/1.

Chapter 5

DISSCUSSION

The KCHS CBA demonstrated that, at the end of year 1, the program is not cost-effective. However, these results reflect only the findings after one year of program involvement. This program was not expected to demonstrate significant effects after the first year, as KCHS is a 4-year program. Since the KCHS program is not complete, the cost-effectiveness of KCHS at the end of year 1 should not be used as an indicator of its future effectiveness and cost-effectiveness. Rather, the results of the CBA provide base-line information in terms of the KCHS costs and benefits for which future KCHS CBAs can be compared. There are many costs involved in program implementation and during these years, there are a limited number of benefits that are realized. There were many variables that could not be included in the KCHS CBA because the children were too young, such as the need for special education, the use of the criminal justice system, and the use of mental health services. In future years, though, participants are likely to experience more benefits as the long-term benefits are realized while no additional costs will accrue. Also, it is likely that resources that are initially invested in services such as medical services for immunizations will have long-term effects that will be revealed in a future CBA. Initially, prevention programs may cost society more money than they save and savings to society may not be evident until many years following program implementation. Thus, although it appears that the KCHS program is ineffective and not cost-beneficial to society, these results are only reflective of cost-benefit status of KCHS after one year of program implementation; a time when the program is expected to cost more. It is important to continue to conduct a CBA on KCHS each year in order to chart

the financial costs and benefits to society. In this way, the point at which the costs of KCHS equals the benefits of KCHS can be determined as well as the approximate time period in which the KCHS program demonstrates significant effects and significant financial savings to society.

Since the two groups were not equivalent at study entry due to the failure of the randomization process, groups were equated by restricting the range of scores on the Parenting Stress Index to lower levels of stress. A large proportion of participants were withdrawn from the analyses because they fell in the higher ranges of stress. In an effort to make comparable groups at study entry, moderate risk groups resulted instead of high risk groups as anticipated. The program might have been shown to be more effective at year 1 if participants at higher risk for child abuse were used in the analyses.

In addition, although no statistically significant effects were found, most of the results tend to favor the comparison group and the intervention group appears to be worse following the intervention. As stated above, since the two groups were not equivalent at study entry due to the failure of the randomization process, groups were equated for similar background characteristics and a large proportion of subjects were withdrawn from the analyses. It is possible that with a greater number of subjects included in the analyses, statistically significant effects would have been revealed. Because the direction of the results favors the comparison group, a greater number of subjects would likely produce statistically significant effects that would also favor the control group. However, several explanations may account for these findings.

Because the analyses performed required that groups were compared at the end of year 1, only those subjects who had participated in data collection at the end of year one were included in the analyses. However, the KCHS program experienced high attrition

rates for families during the first year of program involvement. A total of 26% of the subjects in the intervention group and 16% of the subjects in the comparison group dropped out of the program before completing data collection at the end of year 1. It is unclear if families dropped out of the program because of improvement or deterioration in their lives. If the former is true, then the data do not truly reflect the positive changes of the intervention group, since they dropped out before positive change could be documented through data collection at the end of year one, making the intervention look less successful than it may actually be.

Also, the results may be reflective of the actual effectiveness of the KCHS program in reducing child maltreatment and ensuring healthy child development. For the child protective service reports, it is possible that having in home visitations by a family support working increases the likelihood that suspected cases of abuse and neglect are reported early on, which would account for the increase in reports in the intervention group. The increase in immunizations in the intervention group is expected given that the program encourages families to have their children immunized. The differential use of medical services may be due to the intervention group being more concerned when problems arise and take their children immediately to the hospital rather than waiting for an appointment at a doctor's office. The increase in community service usage in the intervention group for the programs that provide needed supplies may be due to the home visitor encouraging families to obtain beneficial supplies when needed. And, the decrease in community service usage in the intervention group for comprehensive child development and parent education programs may be due to the decreased need for such programs since they are in KCHS, a similar home visitation program.

Nonetheless, previous efforts to document the cost-effectiveness of implementing child

abuse prevention programs have generally compared the costs associated with failure to prevent child abuse and neglect to the costs involved with implementing comprehensive child abuse prevention programs (Bruner, 1996; Caldwell, 1992; Gould & O'Brien, 1995). These researchers have concluded that the cost of implementing child abuse prevention programs is substantially less than the cost of failure to prevent. It would appear that society should implement child abuse prevention programs based on this information. However, it is first necessary to establish that individual child abuse prevention programs are effective in reducing child abuse and neglect as well as cost-effective and that this approach to the prevention of child abuse and neglect is the most effective approach for society to take. As more evaluations of child abuse prevention programs are conducted, the answers to these questions will become more clear. However, according to the initial data from the KCHS CBA and other evaluations of child abuse prevention programs that have not shown statistically significant results between the experimental and control groups (Barth, 1991; Dawson et al., 1990; Infante-Rivard et al., 1989; Siegel et al., 1980), it appears that these programs may not be highly effective in reducing child abuse and neglect. Researchers are encouraged to continue to examine the causes and factors associated with child abuse and neglect and develop improved methods to prevention and detect child abuse and neglect.

In addition to determining if the KCHS program was cost-beneficial at the end of year one, the purpose of this study was to develop a methodology to evaluate the cost-effectiveness of child abuse prevention programs in general. Several problems with the current CBA data collection procedure were identified (i.e., problems with identification, assessment, and measurement of costs and benefits) and a method that recognized the limitations of conducting the CBA on mental health programs was developed and applied

to KCHS. During the application of the proposed CBA on KCHS, new difficulties with the CBA were encountered when identifying program costs and when measuring the costs and benefits in monetary terms and changes were made to the CBA methodology during the application.

In the proposed method for identifying costs, I suggested that any losses that can be attributed to the program (e.g., the increase in use of services that the program encourages subjects to participate in) be presented as costs. However, the word "benefit," which represents the program outcomes may be a misnomer since outcomes may be negative and may produce financial losses. The final cost-benefit estimate is numerically the same at the end of the analysis regardless of where the estimates of the negative outcomes are placed (i.e., on the benefit side as losses or the cost side). However, presenting all outcomes of the programs, both negative and positive, together and all costs of program operation together provides the reader with greater clarity as to the to results of the evaluation and the CBA. Thus, costs include all of the resources required to run the program and benefits include all program outcomes.

In the proposed method for measuring costs and benefits, I suggested that when there is not one straightforward way in which to obtain the cost estimate from or when multiple estimates exist within a source the evaluator should randomly sample three estimates within each source and perform three CBAs. I stated that these CBAs would represent a conservative, middle ground, and optimistic estimate of the financial effectiveness of the program. However, unless one demonstrates that the lowest estimate obtained is actually the most conservative estimate and that the highest estimate obtained is actually the most optimistic estimate, averaging the estimates obtained would provide a more accurate account of the costs and benefits. Obtaining all estimates within a source would allow one

to determine the actual lowest and highest figure for the particular variable, making a conservative, middle ground, and optimistic CBA reasonable. If numerous estimates exist within one source and it is not feasible to obtain all of the estimates, it is suggested that three CBAs still be performed. Although there might be lower and higher costs estimates that were not sampled, providing a low, middle, and high estimate of the costs and benefits is valuable in that it provides a bracketed cost-benefit estimate and emphasizes to the reader that results from CBAs are only approximations.

In addition, when there are different sources in which estimates can be obtained, it is important to determine how a particular variable is actually paid for by participants or society and use that method to determine the cost savings. For example, in the KCHS evaluation, many of the participants were on Medicaid. Only using cost estimates of medical services that individuals with private health insurance plans pay or obtaining Medicaid estimates and health insurance estimates, conducting two CBAs, and stating that one is a conservative estimate and one is an optimistic estimate would not be accurate. Because the KCHS evaluation collected information on the health care coverage, weighted estimates according to participant health care coverage were used. Thus, although it is suggested that evaluators sample all possible sources of cost estimates, it is also important attempt to obtain the most accurate estimate for the given CBA based on how the variable would otherwise be paid for if not prevented.

Evaluating and conducting a CBA of a child abuse prevention program presents numerous methodological difficulties, and economic analyses are probably rarely performed on mental health programs because of these difficulties. However, this study demonstrated that economic analyses, with some alterations, can be performed on mental health programs. Given the expensive nature of mental health programs, it is important

for researchers to determine the cost-effectiveness of implementing these programs and to determine which programs are the most effective and least expensive. To meet this goal, however, researchers need to become familiar with issues involved in conducting a CBA and researchers need to use a standard methodology to estimate the cost-effectiveness of programs. This paper provides researchers with a method to estimate the financial effectiveness of their programs, which will increase the validity and reliability of the CBA. And, since the CBA ratio is always expressed in the same units (dollars), the CBA can be used to make objective interprogram comparisons in terms of cost-effectiveness as more CBAs are conducted.

REFERENCES

Abidin, R. R. (1990). Parenting stress index – manual (3rd ed.). Charlottesville, VA: Pediatric Psychology Press.

Alfano, A. M., Thurstin, A. H., & Nerviano, V. J. (1987). Cost/benefit estimates from ongoing alcoholism outcome research: A working paper. The International Journal of the Addictions, 22, 861-868.

Barnett, W. S. (1993). Benefit-cost analysis of preschool education: Findings from a 25 year follow-up. American Journal of Orthopsychiatry, 63, 500-507.

Barth, R. (1991). An experimental evaluation of in-home child abuse prevention services. Child Abuse and Neglect, 15, 363-375.

Beitchman, J. H., Zucker, K. J., Hood, J. E., DaCosta, G. A., Akman, D., & Cassavia, E. (1992). A review of the long-term effects of child sexual abuse. Child Abuse and Neglect, 16 101-118.

Belsky, J. (1993). Etiology of child maltreatment: A developmental-ecological analysis. Psychological Bulletin, 114, 413-434.

Briere, J. N., & Elliot, D. M. (1994). Immediate and long-term impacts of child sexual abuse. Sexual Abuse of Children, 2, 54-65.

Bruner, C. (1996). Potential returns on investment from a comprehensive family center approach in high-risk neighborhoods: Background paper, Allegheny County Study. Des Moines, IA: Child and Family Policy Center.

Bryce, M. E. (1988). Family-based services: Prevention intervention. Child and Youth Services, 11, 177-203.

Caldwell, R. A. (1992). The costs of child abuse vs. child abuse prevention: Michigan's experience. Unpublished manuscript, Michigan State University.

Callahan, D. (1994). Setting mental health priorities: Problems and possibilities. The Milbank Quarterly, 72, 451-469.

Caruso, G.L. (1989). Optimum growth project: Support for families with young children. Prevention in Human Services, 6, 123-139.

Center for the Study of Social Policy (1995). From outcomes to budgets: An approach to outcome based budgeting for family and children's services. (Available from the Center for the Study of Social Policy, 1250 Eye Street, NW, Suite 503, Washington, DC, 20005).

Center on Child Abuse Prevention Research. (1996). <u>Intensive home visitation: A randomized trial, follow-up and risk assessment study of Hawaii's Healthy Start program</u> (Final report, prepared for the National Center on Child Abuse and Neglect). Chicago, IL: National Committee to Prevent Child Abuse.

Cicchetti, D., & Olsen, K. (1990). <u>The Developmental Psychopathology of Child Maltreatment</u>. In M. Lewis & S.M. Miller (Eds.), Handbook of developmental Psychopathology (pp.261-279). New York: The Plenum Press.

Cicchetti, D., & Toth, S. L. (1995). A developmental psychopathology perspective on child abuse and neglect. <u>Journal of the American Academy of Child and Adolescent Psychiatry, 34, 541-565.</u>

Cohen, D. R. (1984). Utility model of preventive behavior. <u>Journal of Epidemiology and Community Health, 38</u>, 61-65.

Coie, J. D., Watt, N. F., West, S. G., Hawkins, J. D., Asarnow, J. R., Markman, H. J., Ramney, S. L., Shure, M. B., & Long, B. (1993). The science of prevention: A conceptual framework and some directions for a national research program. <u>American Psychologist, 48</u>, 1013-1022.

Dawson, P. M., Robinson, J. L., Butterfield, P. M., van Doornick, W. J., Gaensbauer, T. J., & Harmon, R. J. (1990). Supporting new parents through home visits: Effects on mother-infant interaction. <u>Topics in Early Childhood Special Education, 10</u>, 29-44.

Deter, H. C. (1986). Cost-benefit analysis of psychosomatic therapy in asthma. <u>Journal of Psychosomatic Research, 30</u>, 173-182.

Friedrich, W. N., & Einbender, A. J. (1983). The abused child: A psychological review. <u>Journal of Consulting and Clinical Psychology, 12</u>, 244-256.

Gaines, R., Sandgrund, A., Green, A. H., & Power, E. (1978). Etiological factors in child maltreatment: A multivariate study of abusing, neglecting, and normal mothers. <u>Journal of Abnormal Psychology, 87</u>, 531-541.

Garbarino, J., Kostelny, K., & Grady, J. (1993). <u>Children in dangerous environments: Child maltreatment in the context of community violence</u>. In D. Cicchetti & S. L. Toth (Eds.), Child abuse, child development, and social policy (pp.167-189). Norwood, NJ: Ablex.

Glass, N. J., & Goldberg, D. (1977). Cost-benefit analysis and the evaluation of psychiatric services. <u>Psychological Medicine, 7</u>, 701-707.

Gould, M. S. & O'Brien, T. (1995). Child maltreatment in Colorado: The value of prevention and the cost of failure to prevent. Denver, CO: Center for Human Investment Policy, University of Colorado at Denver.

Guterman, N. B. (1997). Early prevention of physical child abuse and neglect: Existing evidence and future directions. Child Maltreatment, 2, 12-34.

Hamburg, D. A. (1993). The new family: Investing in human capital. (Changes in the American Family). Current, n354, p4(9).

Hardy, J. B., & Streett, R. (1989). Family support and parenting education in the home: An effective extension of clinic-based preventive health care service for poor children. Journal of Pediatrics, 115, 927-931.

Harper, R., & Balch, P. (1975). Some economic arguments in favor of primary prevention. Professional Psychology, 6, 17-25.

Hillson, J. M. C., & Kuiper, N. A. (1994). A stress and coping model of child maltreatment. Clinical Psychology Review, 14, 261-285.

Infante-Rivard, C., Filion, G., Baumgarten, M., Bourassa, M., Labelle, J., & Messier, M. (1989). A public health home intervention among families of low socioeconomic status. Children's Health Care, 18, 102-107.

Jerrell, J. M., & Larsen, J. K. (1986). Community mental health services in transition: Who is benefiting? American Journal of Orthopsychiatry, 56, 78-88.

Karon, B. P., & VandenBos, G. R. (1976). Cost/benefit analysis: Psychologist versus psychiatrist for schizophrenics. Professional Psychology: Research and Practice, 7, 107-111.

Knobbe, C. A., Carey, S. P., Rhodes, L., & Horner, R. H. (1995). Benefit-cost analysis of community residential versus institutional services for adults with severe mental retardation and challenging behaviors. American Journal on Mental Retardation, 99, 533-541.

Lewis, D. R., Bruininks, R. H., Thurlow, M., & McGrew, K. (1988). Using benefit-cost analysis in special education. Exceptional Children, 55, 203-214. Linden, W., & Wen, F. K. (1990). Therapy outcome research, health care policy, and the continuing lack of accumulated knowledge. Professional Psychology, 21, 482-488.

Maynard, A. (1993a). Are mental health services efficient? International Journal of Mental Health, 22, 3-32.

Milner, J. S. (1986). The Child Abuse Potential Inventory: Manual. Webster, NC: Psytec.

National Committee for the Prevention of Child Abuse. (1990). Public attitudes and action regarding child abuse and its prevention, 1990. Chicago: National Committee for the Prevention of Child Abuse.

Norton, S. A. (1995). Medicaid fees and the Medicare fee schedule: an update. Health Care Financing Review, 17, 167-181.

Olds, D. L., & Henderson, C. (1989). The prevention of maltreatment. In D. Cicchetti & V. Calson (Eds.), Child maltreatment: Theory and research on the causes and consequences of child abuse and neglect (pp. 722-763). New York: Cambridge University Press.

Peter, G. (1992). Childhood immunizations. The New England Journal of Medicine, 327, 1794-1803.

Plotnick, R. D. (1994). Applying benefit-cost analysis to substance use prevention programs. The International Journal of the Addictions, 29, 339-359.

Prentky, R., & Burgess, A. W. (1990). Rehabilitation of child molesters: A cost-benefit analysis. American Journal of Orthopsychiatry, 60, 108-117.

Rutz, W., Carlsson, P., von Knorring, L., Walinder, J. (1992). Cost-benefit analysis of an educational program for general practitioners by the swedish committee for the prevention and treatment of depression. Acta Psychiatr Scand, 85, 457-464.

Siegel, E., Bauman, K.E., Schaefer, E. S., Saunders, M. M., & Ingram, D. D. (1980). Hospital and home support during infancy: Impact on maternal attachment, child abuse and neglect, and health care utilization. Pediatrics, 66, 183-190.

Siegert, F. E., & Yates, B. T. (1980). Behavioral child-management cost-effectiveness: A comparison of individual in-office, individual in-home, and group delivery systems. Evaluation & the Health Professions, 3, 123-152.

Simmons, J. T. (1986). Programs that work: Evidence of primary prevention of child abuse. Houston: Greater Houston Committee for the Prevention of Child Abuse.

Starr, R. H. (1990). The need for child maltreatment research and program evaluation. Journal of Family Violence, 5, 311-319.

Sternberg, K. J., (1993). Child maltreatment: Implications for policy form cross-cultural research. In D. Cicchetti & S. L. Toth (Eds.), Child abuse, child development, and social policy (pp. 191-211). Norwood, NJ: Ablex.

Thompson, R. A., & Wilcox, B. L. (1995). Child maltreatment research: Federal support and policy issues. American Psychologist, 50, 789-793.

U.S. Advisory Board on Child Abuse and Neglect. (1993). Neighbors helping neighbors: A new national strategy for the protection of children. Washington, DC: U.S. Government Printing Office.

U.S. Department of Health and Human Services, National Center on Child Abuse and Neglect. (1994). Child maltreatment 1992: Reports from the states to the National Center on Child Abuse and Neglect. Washington, DC: U.S. Government Printing Office.

VanAntwerp, M. (1971). The route to primary prevention. Community Mental Health Journal, 7, 183-188.

Vinokur, A. D., van Ryn, M., Gramlich, E. M., & Price, R. H. (1991). Long-term follow-up and benefit-cost analysis of the jobs program: A preventive Intervention for the unemployed. Journal of Applied Psychology, 76, 213-219.

Weisbrod, B. A. (1983). A guide to benefit-cost analysis, as seen through a controlled experiment in treating the mentally ill. Journal of Health Politics, Policy and Law, 6, 808-845.

Wekerle, C., & Wolfe, D. A. (1996). Child Maltreatment. In E.J. Mash & R.A. Barkley (Eds.), Child psychopathology (pp.492-537). New York: The Guilford Press.

Wolfe, D. A. (1987). Child abuse: Implications for child development and psychopathology. Newbury Park, CA: Sage.

Wortman, P. M. (1983). Evaluation research: A methodological perspective. Annual Review of Psychology, 34, 223-260.

Yates, B. T. (1979). How to improve, rather than evaluate, cost-effectiveness. The Counseling Psychologist, 8, 72-75.

Yates, B. T. (1980). Improving effectiveness and reducing costs in mental health. Springfield: Charles C. Thomas.

Yates, B. T. (1985). Cost-effectiveness analysis and cost-benefit analysis: An introduction. Behavioral Assessment, 7, 207-234.

Yates, B. T. (1994). Toward the incorporation of costs, cost-effectiveness analysis, and cost-benefit analysis into clinical research. Journal of Consulting and Clinical Psychology, 62, 29-736.

Yates, B. T. (1996). Analyzing costs, procedures, processes, and outcomes in human services. Thousand Oaks: Sage