This is to certify that the

dissertation entitled

The Effectiveness of an Alternative Education Program Targeting Youth Who are "At Risk" of Becoming Seriously Delinquent

presented by

Stephen Matthew Cox

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Criminal Justice

Timothy S. Bynum
Major professor

Date July 14, 1995

THE EFFECTIVENESS OF AN ALTERNATIVE EDUCATION PROGRAM TARGETING YOUTH WHO ARE "AT RISK" OF BECOMING SERIOUSLY DELINQUENT

By

Stephen Matthew Cox

A DISSERTATION

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

DOCTOR OF PHILOSOPHY

School of Criminal Justice

1995

ABSTRACT

THE EFFECTIVENESS OF AN ALTERNATIVE EDUCATION PROGRAM TARGETING YOUTH WHO ARE "AT RISK" OF BECOMING SERIOUSLY DELINQUENT

By

Stephen Matthew Cox

Throughout the 1980s, the Office of Juvenile Justice and Delinquency Prevention sponsored an initiative aimed at decreasing juvenile delinquency through alternative education. The premise of this initiative was that disruptive and failing students could be placed in alternative schools. These students would be given more specialized and individual instruction in hopes of keeping them in school and decrease the likelihood that they will participate in delinquent and criminal behaviors. Unfortunately, many of the programs fell short of these goals. Prior research has been unable to fully explain why alternative schools failed to produce changes in participants' delinquency. By analyzing data from an earlier evaluation of an alternative education program, this study addressed issues surrounding the use of an alternative school as a delinquency prevention program. This study found that the program was able to produce small indirect effects on future delinquency for students who attended the alternative school but were not in the targeted population. Also, a higher percentage of students who attended the program and were in the targeted population reported long term decreases in self-reported delinquency than students in the other research groups.

Dedicated to the memory of my grandmother,

Opal I. Cox

ACKNOWLEDGEMENTS

Throughout the process of completing my degree, I have had the fortune of meeting many interesting and intelligent people who have facilitated the completion of my education and expanded upon my knowledge of worldly things. While it would be impossible to remember the names of everyone, there are several people who need to be mentioned. These individuals are Jim Frank, Brett Banner, Jonathon Van Guest, Madeline Wordes, Pamela Schram, Robin Haarr, Sherry Quinones, Beverly Dickinson, Mike Jones, Tim Hart, Chris Simonsen, Mirelle Cohen, Eula Johnson, Rodney Deak, Andy Bressler, John Barlow, Rick Deak, John Francis, Mike Wasserman, Gary Cordner, Mittie Southerland, Loki, Sheba, Art, Mac, Ramon, and Ned.

I would also like to take this opportunity to thank Eli for his patience in helping me understand criminological theory and research methods. He voluntarily listened to my abstract ideas and took the time to form these into rational arguments.

The Dissertation and Guidance Committee consisting of Bill Davidson, Tim Bynum, Merry Morash, and Carol Weissert greatly aided my scholarly progress and promoted the highest degree of learning. I am grateful that my committee allowed me to pursue my own interests within the boundaries of their respected expertise.

I would also like to thank my brother and sister, Sam and Michelle, for not allowing any of my academic success to go to my head. Their continuous support throughout my life has been very helpful in providing me with the motivation necessary for succeeding as a middle child.

Although my parents have never really understood why I wanted to stay in school, they have always supported me in any way possible. I would have never been able to accomplish any of my lofty goals without their encouragement and emotional support. While I may never be able to repay them, I will always be thankful for everything they have done for me.

One of the most positive influences on my completing this degree has been my fiance, Jen. She has helped me in several ways: reading manuscripts, helping me analyze data, and listening to my worries and complaints. Her support has been invaluable in keeping me focused on the tasks at hand.

Finally, I would like to thank all of the nameless teachers, students, administrators, and counselors from the schools that participated in this study. It is my greatest hope that the findings from this study will improve upon the conditions which these individuals find themselves in their everyday lives.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Over ten years has passed since the Office of Juvenile Justice and Delinquency Prevention promoted alternative education programs for preventing and decreasing delinquency. The "Delinquency Prevention through Alternative Education Initiative" was based on the premise that schools could play a significant part in curbing youth crime (D. Gottfredson, 1987). Similar to many delinquency prevention programs, alternative education programs were looked upon with high expectations. These programs were hailed as having the ability to remove disruptive students from the traditional public schools and provide them with a chance of succeeding in a smaller and more supportive environment (Garrison, 1987).

The advantages of alternative schools were that they were smaller, separate from the traditional school, and could easily adjust their curriculum to accommodate students with different educational needs. The general belief behind these programs was that it would be possible to remove the problem students from their regular school, provide them with a positive learning environment, teach them the essential skills to become successful students, and return them to the regular school system. As successful students, they would be less likely to be disruptive in school and delinquent in the community.

Unfortunately, many of the early programs fell short of their expectations (Raywid, 1981). The failure of the early delinquency-related programs appeared to be the result of the failure of school officials to properly utilize the alternative schools and the inability to identify what students these programs would best be able to assist. For instance, many alternative schools were used as a form of punishment for troublesome students from the regular school. These alternative schools were viewed as a way to remove problem students from the regular school with little regard to intervention. This resulted in severe problem students being "dumped" into alternative schools that did not have the available resources to provide necessary services for them (Arnove and Strout, 1980). Also, alternative education programs were often "too little, too late" for seriously delinquent youth (Arnove and Strout, 1980). While these programs may have positively affected school-related attitudes and self-esteem, other aspects of the youths' lives may have had stronger influences on subsequent delinquency (e.g., family and peers).

More recent research has shown that alternative schools may still be able to help problem students, especially if these programs are specifically created for delinquents or low academic achievers (Young, 1990; Garrison, 1987). Unfortunately, the alternative education literature has not addressed many of the questions dealing with program success for specific subgroups of students. A very limited number of studies have attempted to determine what type of students are more successful in alternative schools. Moreover, none of these studies has explored any negative consequences which may occur for students who attend the program but are not in the target population. The primary drawback of the alternative education

literature is that it cannot determine whether alternative schools are effective delinquency prevention programs for students who are seriously delinquent.

This study addressed these issues surrounding target populations and the viability of alternative schools as delinquency intervention programs. The data were collected from an earlier evaluation of an alternative education program for delinquent youth. Students were selected to attend this program based on "at risk" criteria that were created by the county agency which funded the program. The at risk criteria were centered on students who were close to failing in school and becoming involved in serious forms of delinquency. Due to the program referral and selection process, a large number of students attending the program were not part of the targeted program participants. The behavioral and academic achievement differences within the sample created the opportunity to address the previously discussed questions involving alternative schools for delinquents and low academic achievers.

The present study assessed the utility of an alternative school as a delinquency intervention program. The first principal component of the study compared the progress of those students within the target population to those students who were selected for the program but did not meet all of the at risk criteria. The second major component utilized a theoretical alternative education change model to assess direct and indirect effects of the program. The third component explored why some students were more successful in this program than other students.

This study is presented in four major sections. The first section examines the history of alternative education with special attention given to program definition, structure, and program target populations. This section also quantitatively reviews

prior research of alternative education programs and discusses the rationale of the study by outlining the major areas of the research and describing the alternative education program. In the second section, the methodology utilized in the current study is described. The third and fourth sections present the results of the study and discuss the implications of the study for future research and the use of alternative schools as delinquency intervention programs.

REVIEW OF THE LITERATURE

Historical Development of Alternative Schools

The alternative education movement has progressed into its fourth decade. What originally started as a small grassroots movement in a handful of communities has vastly grown to include several thousand programs across the United States.[1] Though the early enthusiasm was slowed during the 1980s, the number of alternative schools is expected to increase throughout the 1990s (Garrison, 1987). This chapter will describe the history of the alternative education movement and address issues surrounding the definition of an alternative school.

Definition of an Alternative School

Alternative education programs are difficult to define because there are many types of alternative schools. In general, alternative schools can be described as specialized educational programs taking place outside the mainstream school system. Smith (1974) suggested that an alternative school is any school that provides alternative learning experiences beyond those provided by the traditional schools within its community and is available to every family at no cost. This basic definition has been further developed through these three criteria.

---

[1]Wells (1993) believes that there are 4000 to 8000 alternative education programs currently operating in the United States.

First, for a school program to be defined as an alternative, it must have a separate administrative unit with its own personnel, and not be a special class or series of classes in the regular school. It is important for alternative education programs to be autonomous. Being apart from the traditional school, the alternative school can provide a more supportive and accepting environment where the students feel they have more control over their lives (Arnove and Strout, 1980). Also, the students will be able to avoid the negative stigmatization which may have been placed on them in their regular school for being a low academic achiever or a disruptive student.

Second, it is important for alternative schools to be voluntary and available to every student in the school district (Raywid, 1983). These schools should not be based on assignment or strict enrollment criteria. Allowing for choice and making attendance at the alternative schools voluntary: (1) makes the school responsive to the diversity of the students; (2) maintains responsiveness to the needs of minority groups; (3) enhances student interest and commitment to education; and, (4) restores public confidence in the schools (Raywid, 1983). The students may also be more attached and committed to the alternative school curriculum because it was their choice to attend.

Third, community participation and responsiveness are important in the development and maintenance of the alternative school. The philosophy behind the alternative education movement lies in the establishment of unique and individual programs developed for a specific local population. The primary source of support for an alternative school should be parents and students (Duke, 1978).

Raywid (1983) added that it is important for the structure and role of the alternative schools to be different from the traditional school and other alternative schools in order to reflect the individuality of the surrounding community. She maintained that the creation and development of an alternative school should be a grassroots effort that included students, parents, teachers, and school administrators. This effort, she argued, would result in an education program that would be unique to traditional schools and other alternative schools because it would build upon the strengths of the community and focus on the individual needs of its students.

Exploring Target Populations

One major question regarding alternative schools has focused on what type of students would be more successful in an alternative school setting. It was originally believed that high academic achievers were more likely to flourish in this type of program. Early alternative school proponents thought that high academic achievers in the traditional schools were being inhibited because they could only progress as fast as the slowest students. A self-paced curriculum and relaxed classroom structure seemed to be ideal for these students.

However, early studies found that these students were not satisfied with their alternative school experience and did not particularly like the absence of the traditional teacher-student roles (Singleton, Boyer, and Dorsey, 1972). In contrast, later studies concluded that the absence of consistent roles greatly contributed to the

increased satisfaction with attitudes of the alternative school students (Ellison and Trickett, 1978).[2]

The discrepancy between these different beliefs may be explained by the type of students who attend alternative schools. Early alternative schools (similar to those in Singleton, Boyer, and Dorsey, 1972) recruited students who were high academic achievers. These students performed very well within the traditional education model and may have expected the alternative school to be an extension of the traditional school. Thus, it was likely that the lack of role definition in the alternative school created uneasiness among these students who were accustomed to and successful under the traditional model.

Later in the decade, alternative schools began to attract students who had traditionally been low academic achievers (Gaite and Rankin, 1975). These were students who: (1) generally had a poor attitude toward school; (2) desired a greater amount of staff support; and, (3) wanted more self-paced and independent instruction. It was believed that alternative schools were more desirable to low academic achievers because the curriculum and structure allowed for more independence with increased staff support, which improved poor attitudes toward school (McCauley and Dornbusch, 1978). In other words, students who performed well in a traditional setting were uncomfortable with the structure of alternative schools, while students who did not perform well in a traditional school were able to better adjust to the alternative school because the latter allowed for more independence. Also, the

---

[2]Ellison and Trickett (1978) did not specify whether the students attending the alternative school in their study were high or low academic achievers.

decreased student-to-teacher ratio in alternative schools provided students with more staff support without impeding the students' ability to work independently.

Beginnings of Alternative Education

The concept of alternative education originated in the mid-1960s (Wells, 1993; Young, 1990; Raywid, 1983). While there have been several types of alternatives to the public system of education before 1960, these have historically operated under the traditional education model, claiming to provide the same services more efficiently and effectively. By definition, these were not true alternative schools. For instance, many alternative schools were offered by private organizations. The private schools were very expensive, thus denying low income students the opportunity to attend. Second, alternative schools sponsored by parochial schools lacked scope and diversity. These programs were often an extension of the traditional education model and were not developed for students failing in a traditional setting (Deal and Nolan, 1978).

Post-1960 alternative schools grew out of a general distaste for the oppressive nature and the unresponsiveness of the traditional education model (Korn, 1992; Young, 1990; Raywid, 1983; Duke, 1978; Deal and Nolan, 1978). The modern concept of alternative education was developed from a belief that the traditional model of education had failed to adjust to societal changes and the diverse characteristics of the students (Smith, 1974). The argument followed that public schools failed to adapt to the increasing diversity of the various cultures and communities. The public school system was viewed as flawed because it designated some students to fail.

Proponents for alternative education said that these programs provided reform in the education system without creating dramatic changes from the status quo (Smith,

1974). The movement was based upon the concept of creating individualized education models according to the philosophy and needs of the surrounding community. The instructional methods were to be radically different from the traditional education model. A significant amount of the decision-making regarding curricula, roles, and structure was to come from parents, teachers, and students. Alternative schools were to be different from regular schools. They would have an informal classroom structure, individualized and self-paced instruction, and little emphasis on grades and test scores with few or no comparative performance assessments.

Current Status of Alternative Education

While there are still many alternative schools operating at the present, the rapid expansion of alternative education did not reach the original expectations that alternative education would revolutionize American schooling (Moore, 1978). In fact, the initial momentum during the 1960s through the early 1970s had sharply eroded by the end of the decade (Raywid, 1981; Moore, 1978).

It was speculated that growth was slowed due to a series of disappointing results from early evaluations of several programs (Raywid, 1981). For instance, in evaluating its own grants for alternative school programs, the Ford Foundation concluded that the major finding was the increased knowledge of what variables were not significant in improving schools (Raywid, 1981).

Moore (1978) also suggested that many alternative education programs were unable to survive the Federal government's budget cuts during the late 1970s. This may explain the decrease in the interest and number of alternative schools during the

late 1980s, as Presidents Reagan and Bush significantly decreased the amount of Federal funding for programming and research of alternative education programs (Wells, 1993).

Although many alternative schools were closed during the 1980s and empirical research has not produced overwhelming conclusions regarding the effectiveness of alternative education programs, there is general agreement among alternative education supporters that the number of alternative education programs for disruptive and at risk youth will increase during the 1990s (Garrison, 1987). Reasons for the predicted growth are similar to a decade ago: "alternative schools have the potential to reduce dropouts, improve student achievement and parental involvement, reinforce class integration, and provide support for students dissatisfied with traditional programs..." (Garrison, 1987:3).

Conclusions

The current alternative education movement originated more than thirty years ago. Alternative schools arose out of dissatisfaction with the traditional public school model. Many people felt that the traditional education model was unresponsive to the changing needs of an increasingly diverse student population. Students in these programs chose to attend as an escape from the strict and rigid structure of the public schools. Early alternative school programs were primarily established for high achieving students, bored with lecture-type instruction in large classrooms. The alternative school offered these students more individualized instruction and the opportunity to work at their own pace, rather than be restricted by the pace of the

classroom instruction. Emphasis was placed on goal-oriented work and learning rather than test-taking and grades.

The concept of alternative education was soon applied to students who were low school achievers and potential dropouts. The same principles were applied as in the earlier alternative schools; a low student-to-teacher ratio that would allow for more individualized instruction and help in a positive and informal environment. By placing emphasis on goal-oriented work without tests or other performance evaluations, students working at a slower pace would not be penalized for lagging behind the rest of the class. It was believed that students in this environment would begin to like school, have higher attendance, and would perform better. It was also believed that the improved attitudes and behaviors would remain intact once the students returned to the traditional schools.

Unfortunately, the findings from research on alternative education programs are relatively inconclusive regarding the effectiveness of these programs (Young, 1990; Hawkins and Wall, 1980; Duke and Muzio, 1978). Further, very few studies have been dedicated to testing which students perform better in alternative schools compared to students in traditional schools (e.g., high academic achievers, low academic achievers). This research will be reviewed in the next section.

Meta-Analytic Assessment of Alternative Schools

There is an extensive literature dedicated to developing the relationship between schools and delinquency (e.g., Sampson and Laub, 1993; G. Gottfredson, 1987; Hawkins and Lishner, 1987; Polk, 1984; Loeber, and Dishion, 1983; Pink,

1982; Liazos, 1978). Studies have found that a variety of school-related variables are causally linked to delinquent behavior. For instance, school performance (Jarjoura, 1993; Farrington, 1992; Tremblay, Masse, Perron, Leblanc, Schwartzman and Ledingham, 1992; Cohill, 1991; Tracy, Wolfgang, and Figlio, 1990; Short, 1990; Lawrence, 1985; Phillips and Kelly, 1979), school attendance (Fagan and Pabon, 1990; Thornberry, Moore, and Christenson, 1985; Elliott and Voss, 1974), and attitudes toward school (Cernkovich and Giordano, 1992; Loeber, Stouthamer-Loeber, Van Kammen, and Farrington, 1991; Mak, 1991; Wiatrowski and Anderson, 1987; Sederstrom and Weis, 1981; Kelly and Balch, 1971) have all been shown to be related to juvenile delinquency.

In general, academic skill deficits have been found to be strong covariates of delinquency (Dishion, Loeber, Stouthamer-Loeber, and Patterson, 1984). School studies have reinforced the image of delinquents who have been academic underachievers (Loeber and Dishion, 1983). Early predictors of delinquency have been low school achievement, low vocabulary, and poor verbal reasoning (Loeber, 1990; Loeber and Dishion, 1983). Predictors of later delinquency occurring during high school were low grade point average and school retardation (Loeber and Dishion, 1983).

Moreover, positive school-related factors have been found to have a strong protective effect against delinquency (Stouthamer-Loeber, Loeber, Farrington, Zhang, van Kammen, and Maguin, 1993; Kolvin, Miller, Fleeting, and Kolvin, 1988). That is, positive academic achievement, positive attitudes toward school, high cognitive ability, and high school motivation can reduce the risk of delinquency for children

with other risk factors present (e.g., low socioeconomic status, distressing home atmosphere)(Kolvin et al., 1988).[3]

Schooling and Delinquency

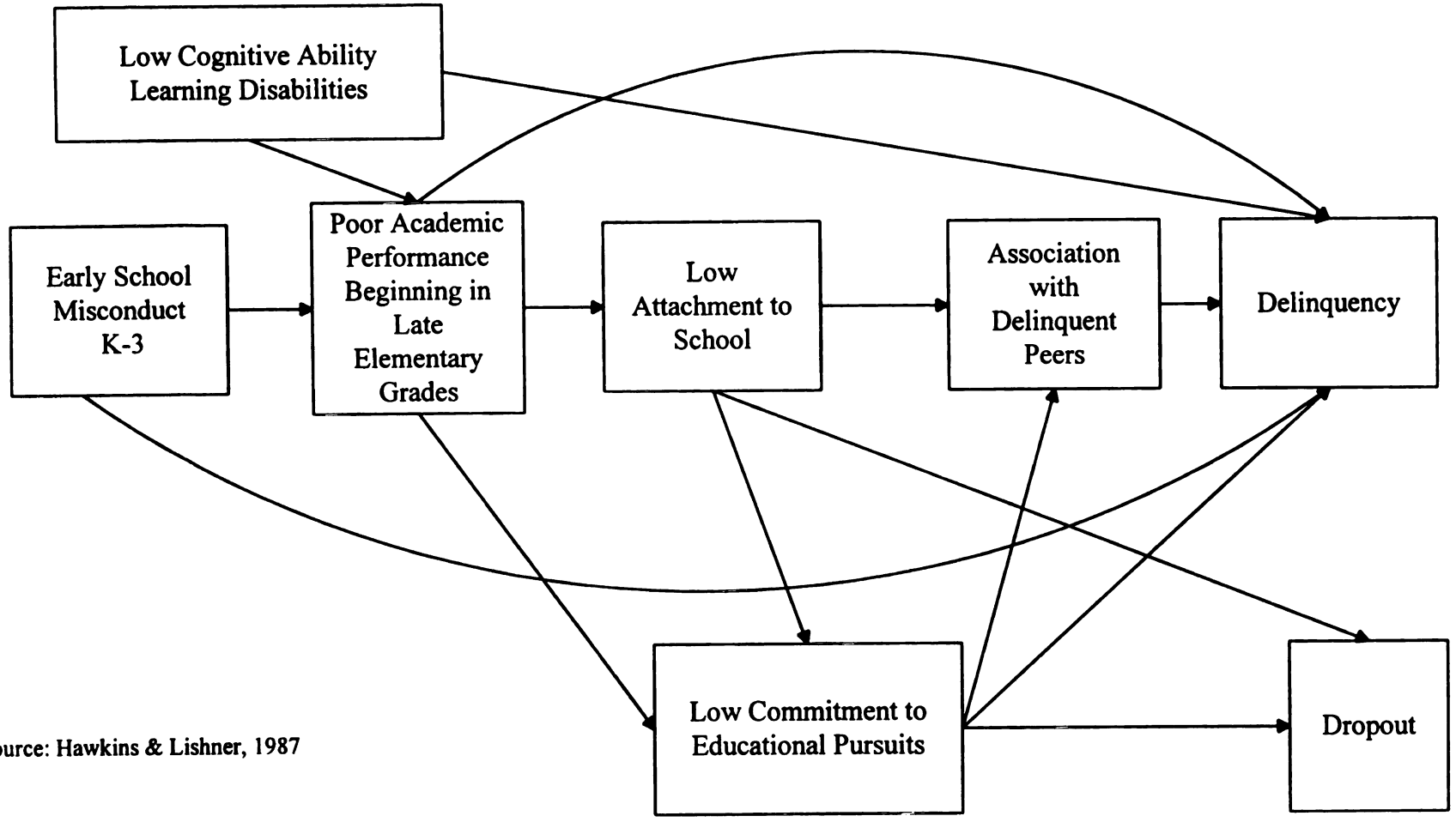
Figure 1 presents Hawkins and Lishner's (1987) model of school-related risk factors for individual delinquency.[4] The first school-related factor that appears to increase the risk of later delinquent behavior is poor adjustment to school in early elementary grades. This is characterized by aggressive and disruptive behavior. Early school misconduct appears to have a direct and indirect effect on subsequent delinquency. The risk of performing poorly in school appears to increase for youth who act out in elementary school. Acting out in elementary school and poor school performance are also risk factors commonly associated with delinquent behaviors.

The risk of delinquency is also directly and indirectly increased by poor school performance beginning in the late elementary grades and continuing into middle school. Low school performance is associated with low levels of attachment to school and teachers, and with reduced levels of commitment to educational pursuits. Prior research has established the strong inverse relationship between a positive school experience and delinquency. These findings provide a foundation for developing

---

[3]Loeber (1990) defined a risk factors as an event occurring earlier that predicts a later outcome. For example, a child being exposed to a risk factor (for example, poor school experience) increases the probability that a subsequent negative outcome will occur (such as delinquency).

[4]Hawkins and Lishner (1987) point out that their model is not meant to be a comprehensive model of delinquency etiology, but rather a representation of how school-related factors appear to be implicated in delinquency.



Source: Hawkins & Lishner, 1987

Figure 1: Conceptual Model of the Relationship Between School-Related Factors and Delinquency

strategies for preventing delinquency (Gottfredson, 1981). One such strategy has been alternative education.

Alternative Schools for Delinquents

Alternative schools for delinquent youth became common in the late 1970s and culminated with the "Delinquency Prevention through Alternative Education Initiative," administered by the Office of Juvenile Justice and Delinquency Prevention. This initiative lasted through the mid 1980s.

Although there are no standard models for alternative schools for delinquents, the underlying beliefs for these programs are similar to other types of alternative schools. That is, the programs seek to provide a more positive learning environment than the traditional schools through low teacher-to-student ratios, individualized and self-paced instruction, noncompetitive performance assessments, and less structured classrooms (Raywid, 1983). The belief is that the self-paced curriculum and an informal classroom structure allows students to work independently and affords staff more time for individualized instruction. Alternative school students are also believed to be under less pressure to perform at the same level as other students since success is measured by individual achievements, rather than by comparing individual progress to that of the entire class (Gold and Mann, 1984).

In theory, students feel more comfortable in this environment and are more motivated to attend this type of school. Students attending alternative schools are believed to have higher self-esteem, more positive attitudes toward school, improved school attendance, higher academic performance, and decreased delinquent behaviors than when they attended traditional schools (Arnove and Strout, 1980).

These ideas are closely related to Hawkins and Lishner's (1987) conceptual model. The alternative school experience would improve a student's performance, leading to an increase in attachment to school and a higher commitment to educational pursuits. The improved performance and increased commitment to educational pursuits would have a direct effect on reducing delinquency. These factors, and an increased attachment to school, would have an indirect effect in decreasing delinquency through a lower association with delinquent peers.[5]

Additionally, Gold and Mann (1982) created a social psychological process model specifically for alternative education programs (Figure 2). This model looked at changes in students' performance and behavior through four mediating processes: students' perceptions of the flexibility and fairness of their schools' policies and rules; students' assessment of their academic prospects (their beliefs in their chances of becoming successful students); their assessments of how well they were performing in the student role (consisting of recent school grades, self-reports of their effort in doing school work, and satisfaction with their performance); and, students' global attitude toward school and their relationships with teachers.

Gold and Mann's model suggests that the alternative school experience will indirectly affect delinquency by improving the youths' perceptions of school. For

---

[5]Even though the alternative education literature has not discussed the relationship between delinquent peers and delinquent behavior, it is inferred that delinquent peers are part of the overall negative environment of the traditional school. Hence, one can argue that an alternative school indirectly affects the influence of delinquent peers by taking the student out of the traditional school and away from delinquent peers.

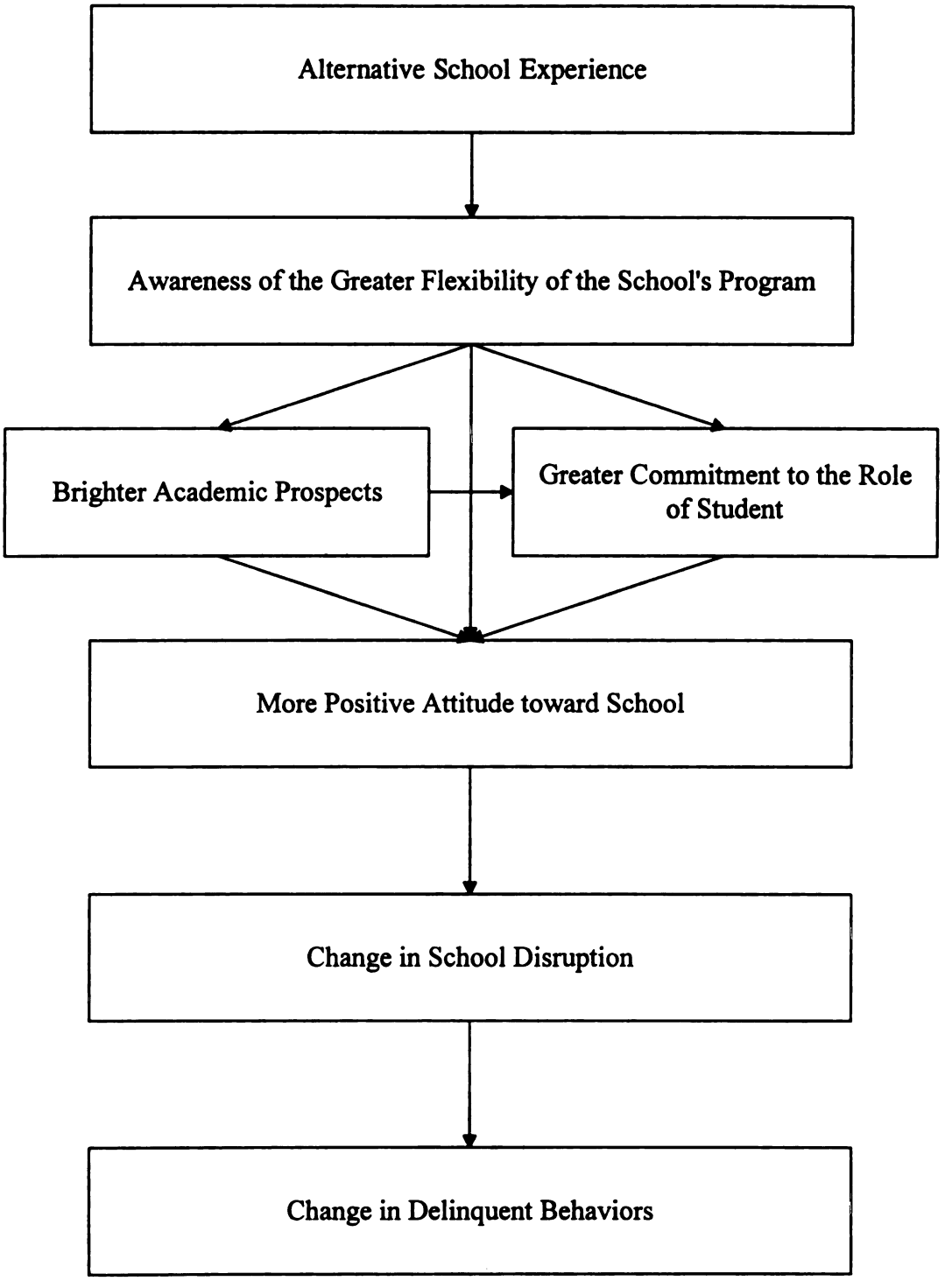


Figure 2: Alternative School Model of Change

instance, a primary goal of alternative school staff in schools for disruptive youth is to make the students aware that the rules and structure of the school are more flexible and fair than the regular school. Students noticing the difference in flexibility and fairness will begin to believe that they have a better chance of succeeding in school than before. This will also foster a greater commitment to the student role.

Being more optimistic and committed to educational pursuits, the alternative school students will have more positive attitudes toward school, even after they have returned to the regular school. As the attitudes improve, disruptive behavior and delinquent activities will decrease.

The Social Psychological Model was based upon the assumption that the student role is an important aspect of an adolescent's life. Gold and Mann believed that failing in the student role would seriously threaten a youth's self-esteem. Subsequent delinquent behavior would be a result of a defensive process acting as a way of protecting against low or negative self-esteem (McCarthy and Hoge, 1984; Bynner, O'Malley and Bachman, 1981; Gold, 1978; Rosenberg and Rosenberg, 1978; Gold and Mann, 1972; Deitz, 1969; Tangri and Schwartz, 1967; Reckless, Dinitz, and Murray, 1956).

The principal hypothesis of these beliefs is that unsatisfactory fulfillment of the student role will lower self-esteem. The negative school experiences and the decrease in self-esteem will create a poor school attitude (Richards, Gaver, and Golicz, 1984). This will lead to disruptive behavior, first taking the forms of attacks of school property, personnel, and fellow students. These serve two purposes. First, the disruptive behavior takes place where the pain of failure is felt the most -- in school.

Second, the school setting provides the youth with an audience by which to perform. A audience of peers, many of which are likely to have similar problems, will observe and approve of these behaviors and typically are involved in similar actions (Gold, 1978).

Gold and Mann tested this theory through the Social Psychological Model. They believed that self-esteem was the key mediating variable of changes in delinquency through school-related processes. However, while they found that their model was successful in predicting school-related changes in the alternative education students, youths' self-esteem was not important to the processes of change.

Prior Reviews of Alternative Schools

There are two divergent conclusions from literature reviews of alternative school programs. First, alternative schools have been effective in achieving positive outcomes and program goals (Young, 1990; Reilly and Reilly, 1983; Barr, Colston and Parrett, 1977). For example, one summary of six evaluations of separate alternative education programs concluded that students attending alternative schools had: (1) higher levels of academic achievement than students in the traditional schools, (2) more positive attitudes toward school and higher self-concepts than when they attended the traditional schools, (3) higher attendance and lower levels of suspensions and acts of school disruption than when they attended the traditional schools, and (4) continued academic success when they returned to their traditional schools.

The second conclusion of alternative school literature reviews is that it was not possible to reach conclusions regarding the effectiveness of alternative schools

(Hawkins and Wall, 1980; Duke and Muzio, 1978). This research points to several methodological shortcomings that may have led to biased results. First, many studies lacked a control or comparison group. This problem does not allow for controlling for statistical regression toward the mean. That is, students with extremely high or low outcome scores at the pre-program assessment may have changed during the program period simply because their scores could not get any higher or lower. Without a control or comparison group, it is difficult to make conclusions regarding program impact. For example, positive changes found in studies without a control or comparison group may simply be attributable to maturation rather than participation in an alternative school (Hawkins and Wall, 1980).

Second, there is often a failure to randomize when sampling from populations of students, teachers, and parents (Duke and Muzio, 1978). Singleton, Straits, Straits, and McAllister (1988) point out that nonrandomized comparison groups may result in a biased sample that will limit the generalizability of the results.

Third, studies have a tendency to eliminate data on program dropouts from aggregate statistics or final data analysis (Hawkins and Wall, 1980; Duke and Muzio, 1978). Since many of the program dropouts are the least successful students, study results may be positively biased by including only those students who do well in the alternative school and successfully return to the traditional school.

Fourth, very few studies provide follow-up data on students who leave early or graduate from alternative schools (Duke and Muzio, 1978). One of the primary goals of many alternative education programs is to provide program participants with the necessary skills to successfully return to the traditional school system. Hence, a

study's conclusion that an alternative school produced the desired positive results is greatly diminished without some knowledge of the student's once she/he leaves the alternative school.

Characteristics of successful alternative schools. Young (1990) reviewed several empirical studies of alternative schools and concluded that small school size, a supportive and noncompetitive environment, and a student-centered curriculum were structural characteristics commonly associated with programs success. While there is general agreement on the structural characteristics of successful alternative schools, there is little consensus regarding the appropriate population for these programs. For instance, Reilly and Reilly (1983) contend that students already performing at high levels of academic achievement will continue to be successful, whereas lower achieving students can be expected to be unsuccessful in the alternative school program, especially if they have attendance and/or disciplinary problems. In contrast, others have concluded that programs focusing on specific target populations (e.g., low school achievers or delinquents) are more likely to produce positive results than are less focused programs, because the program structure will be centered on a definitive problem or need (Young, 1990; Garrison, 1987; G. Gottfredson, 1987).

Limitations of prior literature reviews. Unfortunately, prior reviews have been limited to a narrative approach, summarizing the alternative education literature. Several of them provided a case-by-case synopsis of individual programs based on prior evaluations or reports, while others summarized the findings of published studies categorized by specific outcome variables (e.g., delinquent behavior, academic achievement, attendance, school attitude, self-concept). Caution should be exercised

when interpreting traditional literature reviews because they tend to suffer from: (1) the selective inclusion of studies; (2) differential subjective weighting of studies in the interpretation of a set of findings; (3) misleading interpretations of study findings; (4) a failure to examine other study characteristics as potential explanations for consistent results across studies; and, (5) a failure to examine the effect of moderator variables in the relationship to the outcome variable (Wolf, 1986).

The Present Review

In order to overcome the limitations of narrative reviews, the present review employed meta-analysis, a quantitative method of summarizing the findings of empirical research on alternative education programs. Meta-analytic procedures include an estimation of the magnitude of the program impact (the effect size) and an estimate of errors which may be due to sampling or measurement artifacts (Schmitt and Klimoski, 1991; Hunter and Schmidt, 1990; Glass, McGaw, and Smith, 1981). In addition, meta-analysis allows for coding intervention characteristics and evaluation methods of the study for the purpose of examining relationships between these characteristics and the quantitative estimate of program impact (Mayer, Gensheimer, Davidson, and Gottschalk, 1986). By summarizing findings across studies, this technique can differentiate program effects from other differences such as uncontrolled characteristics of the subjects (assignment of subjects, grade level, target populations, etc.), deficiencies in the research design (whether pre-post designs have stronger findings than experimental designs), and other sources of variation (e.g., program intensity and duration), which may not have been adequately controlled in single studies (Logan and Gaes, 1993).

Sample of Studies

The first step in a meta-analysis is to identify the population of relevant studies (Schmitt and Klimoski, 1991). The present review was based upon studies obtained from computer searches of the Educational Resources Information Circuit (ERIC), PsychLit, and the National Criminal Justice Reference Service (NCJRS) covering the years 1966 through 1993. These computer based searches employed the following key words: alternative schools, alternative education, and nontraditional education. These searches yielded 241 citations referring to alternative education programs.

The next step in the selection of studies was to review the abstracts of the 241 citations and omit those that did not fit the general definition of an alternative school and/or were not empirical evaluations. To be included in the database, alternative education programs had to consist of a separate curriculum, be housed outside of the conventional school, and statistically assess at least one type of outcome (e.g., student attitudes toward school, school performance, and delinquency). Only 87 of the studies met these criteria.[6] A large portion of the citations turned out to be arguments promoting or advertising alternative schools (146), qualitative studies (6) and national directories of alternative schools (2) rather than evaluations of these programs.

Furthermore, since meta-analysis employs quantitative methods of converting statistical results into a standard metric (Wachter and Straf, 1990), studies failing to

---

[6]The low number of empirical research is not surprising. Other reviews have pointed out that the alternative education literature overwhelming focuses on the history and structure of alternative schools rather than on outcome variables (Garrison, 1987; Barr, Colston, and Parrett, 1977).

report or make reference to statistical results (e.g., means, standard deviations, correlations, t-tests, chi-squares, F values, etc.) were not included in the present review. Out of the 87 studies, 57 were evaluations of alternative schools that provided adequate statistics necessary for inclusion in the meta-analysis.[7]

Coding Methods

Study characteristics. The 57 evaluations were coded according to procedures described by Hunter and Schmidt (1990). Detailed coding was undertaken to obtain as much information as possible regarding the study characteristics (see Appendix A for the data collection instrument). The variables included: investigator characteristics (year of publication, type of publication, academic discipline of investigators), sample characteristics (gender ratio in sample, racial composition, age, grade in school, target characteristics of sample), intervention characteristics (whether the alternative school was in an urban, rural, or suburban area; daily length of program, overall duration of the program), and methodological characteristics (type of research design utilized, how the program participants were assigned to the program).

Delinquency, school performance, school attitude, and self-esteem were coded as outcome variables. Official delinquency data (e.g., police contacts, juvenile court records, etc.) were combined with studies of self-reported delinquency for the

[7]Many of the citations, especially those found in ERIC, were final reports of several individual programs. In these cases, each program was coded as a separate study. For example, Gottfredson (1983) included the evaluation of several separate alternative education programs in one final report. Each of these evaluations were included as a separate study. This counting method produced 57 unique outcome studies from 27 reports.

delinquency outcome variable.[8] School performance was measured by amalgamating standardized test scores, classroom grades, and attendance. Attachment to school, attitudes toward school, and commitment to school activities data were combined to create a school attitude variable.

The self-esteem outcome variable was based upon various measures of self-esteem and self-concept. It was included in the meta-analysis though it is generally not considered a school-related variable, due to the strong support in the delinquency literature regarding the relationship between self-esteem and delinquency (McCarthy and Hoge, 1984; Bynner, O'Malley, and Bachman, 1981; Gold, 1978; Rosenberg and Rosenberg, 1978; Gold and Mann, 1972; Reckless, Dinitz, and Murray, 1956). In addition, many evaluations of alternative school programs have included self-esteem as an outcome variable.

Assessment of program effects. The most important part of a meta-analysis is the determination of program effects. Two separate methods were used to assess program effects. First, an overall effectiveness rating was assigned to each study, based on its overall conclusions. The rating consisted of either positive effects, negative effects, or no effects. For example, if the author concluded that the program produced an overall positive effect, the study was assigned an overall rating of positive.

Effectiveness ratings were also assigned to individual program outcomes within each study. These were drawn from the conclusions of the study regarding specific

---

[8]Separate analyzes were originally performed for self-reported and official delinquency outcomes. However, these did not produce different results.

program effects and were coded as having a positive effect, negative effect, or no effect. Using this method, it was possible to assess a program's ability to produce different outcomes. This method is often called a ballot box or vote counting method (Wolf, 1986; Glass et al., 1981).

Second, standardized effect size scores were calculated for each study and for each outcome in it. The effect sizes were calculated from the studies by transforming the reported statistics (t values, F values, means and standard deviations, chi square values, etc.) into *r* values using formulas developed by Hunter and Schmidt (1990). Further, the actual overall effect size score was created for each study by averaging the individual effect size scores and weighting by the number of individuals in the study (Schmitt and Klimoski, 1991).

Effect sizes are correlations that test the null hypothesis of no treatment effect (Hunter and Schmidt, 1990). The significance of the effect scores was assessed using 95% confidence intervals rather than using significance tests, following a suggestion by Hunter and Schmidt (1990).[9] If the confidence interval includes zero, the null hypothesis cannot be rejected, meaning the intervention has not affected the outcome variable.

Studies reporting "no significant findings" without reporting the actual values of the statistics were coded as having an effect score of .00, which was assumed to be

---

[9]Hunter and Schmidt (1990) suggest using confidence intervals over significance tests when interpreting effect size correlations, especially in reviews with small samples. Confidence intervals eliminate the necessity of establishing significance levels and are not as likely to be inflated by measurement error; thus decreasing the possibility of the investigator incorrectly interpreting the significance test.

the best estimate of the population effect size for studies reporting no effect. Although this conservative approach is not universally accepted, it is generally viewed as a way to avoid greater biases by omitting studies with nonsignificant findings (Wachter and Straf, 1990). Glass et al. (1981) found that neither eliminating these effect scores, nor altering the coding procedure, changed their overall effect size by a significant amount.

Reliability of coding. Ten studies were coded twice to produce an estimate of interrater reliability. The agreement reliability was 92% across all variables included in the meta-analysis.

Results

Descriptive findings. There were 57 alternative education programs included in the meta-analysis. The studies were written between the years 1972 through 1993. Seventy-seven percent (44) of the studies were unpublished technical reports with the remaining 23% (13) coming from professional journals or book chapters. Eighty-two percent (47) were from education journals or ERIC (Table 1).

Thirty-three percent (19) of the programs reported having racially mixed samples.[10] Most of the programs (33) were alternative high schools (58%).[11]

---

[10]Unfortunately, several studies did not report detailed demographic data. All that is known from this percentage is whether the study mentioned having minorities in the alternative school program. Studies did not indicate the percentage of the group which consisted of minorities or ethnic group to which individuals belonged.

[11]Eleven (19%) of the programs included middle school students and three (16%) were for elementary school students. Four (7%) programs did not report the grade level of the participants.

Table 1

Descriptive Findings of the Meta-Analysis

Characteristics	Number (Percentage)*
Investigator Characteristics	
Education studies	47 (82%)
Technical Reports	44 (77%)
Journals/Book Chapters	13 (23%)
Sample Characteristics	
Programs reporting a racial heterogenous sample	19 (33%)
Alternative high schools in sample	33 (58%)
Programs with specific target populations	35 (61%)
Intervention Characteristics	
Schools located in an urban school district	44 (77%)
Programs with a daily length of a full school day	27 (84%)
Programs with a duration over one school year	14 (63%)
Methodological Characteristics	
Studies having:	
Comparison group research designs	30 (47%)
Pre-post research designs	34 (53%)
Studies having random assignment of program participation:	12 (40%)

*Percentages are based upon the number of studies reporting these data.

Further, 61% (35) of the programs targeted specific populations; either low academic achievers (42%) or delinquents (19%). The majority of alternative schools (44) were in an urban school district (77%). Many studies did not provide detailed descriptions regarding daily length of the program and duration of the intervention.[12] Of these that did report such data, 84% (27) of the programs lasted the full school day and in 64% (14) of the programs the students had attended the alternative school for over one school year.

Finally, seven studies reported both pre-post and comparison group assessments. This resulted in 64 unique research designs, 34 (53%) of these employed a pre-post design without a control or comparison group and 30 (47%) were either pre-post or post only designs with a control or comparison group. Twelve of the 30 (40%) comparison group designs employed random assignment. Most of the research designs (60%) used matching or convenience samples for comparison of program to nonprogram participants.

Effectiveness results[13]. Three components were included in the examination of effectiveness results. These are: the vote counting method, effect size scores, and the correlations of overall effect sizes with selected moderators.

---

[12]Thirty of 57 programs reported daily length of the program and 22 out of 57 reported the duration of the intervention.

[13]Delinquency was reverse coded for all of the analyses in order to maintain a consistency of direction in the interpretation of program effects. Programs which are coded positive for delinquency should be interpreted as having a positive effect on reducing delinquent behaviors.

Vote counting method. The vote counting method of review consisted of coding the reported results for each outcome variable as having a positive effect, no effect, or a negative effect. Table 2 presents the findings from this method, along with the number of distinct research designs assessing each outcome. The findings were grouped by the type of research design due to differences between those studies employing a pre-post design and studies with a comparison group. These findings show that alternative education programs seldom produce negative effects; however, the distinction between positive effects and no effects appears to be dependent upon the research design. Except for school attitudes, the majority of the studies employing a pre-post research design found a positive effect, while the majority of studies with comparison group designs found no effects.

Effect sizes. The effect size scores are presented in Table 3. Column A shows the number of studies reporting the specific outcome. Column B identifies the number of students in the studies. Column C displays the obtained mean effect size weighted equally, while Column D shows the mean effect size weighted for the number of students in each study. Column E is the corrected variance of the effect size. Column F is the percentage of the observed variance due to sampling error. Finally, Column G is the 95% confidence interval around the weighted effect size.

The effect size scores present a slightly different picture than the vote counting method. It suggests that alternative education programs tend to have overall positive effects. The mean effect sizes for all of the outcomes across both research designs were greater than zero (with the exception of delinquency for both types of designs and school performance for comparison group designs). The largest weighted mean

Table 2

Vote Counting Method Results from the Meta-Analysis

Outcome Variable	N	Positive Effect	No Effect	Negative Effect
Overall				
Comp	30	7 (23%)	20 (67%)	3 (10%)
Pre-Post	34	23 (68%)	11 (32%)	0
Delinquency				
Comp	9	2 (22%)	6 (67%)	1 (11%)
Pre-Post	4	2 (50%)	1 (25%)	1 (25%)
School Performance				
Comp	25	3 (12%)	16 (64%)	6 (24%)
Pre-Post	31	19 (61%)	12 (39%)	0
School Attitude				
Comp	16	10 (63%)	5 (31%)	1 (6%)
Pre-Post	6	3 (50%)	3 (50%)	0
Self-Esteem				
Comp	13	4 (31%)	9 (69%)	0
Pre-Post	10	7 (70%)	3 (30%)	0

Table 3

Meta-Analysis Effect Size Results

Outcome Variable	A	B	C	D	E	F	G
Overall							
Comp	30	6986	.11	.08	.09	35%	.04 to .12
Pre-Post	34	1553	.36	.33	.26	21%	.23 to .43
Delinquency							
Comp	9	1542	.00	.03	.09	41%	-.05 to .11
Pre-Post	4	262	.40	.23	.42	7%	-.20 to .66
School Performance							
Comp	25	5576	.06	.06	.12	24%	.00 to .11
Pre-Post	31	1515	.34	.27	.25	22%	.17 to .37
School Attitude							
Comp	16	2457	.22	.20	.22	11%	.08 to .31
Pre-Post	6	289	.38	.49	.15	36%	.31 to .62
Self-Esteem							
Comp	13	3067	.09	.07	.06	57%	.02 to .11
Pre-Post	10	383	.34	.28	.17	44%	.14 to .42

A = number of studies reporting this outcome variable
B = number of subjects reflected in the effect size
C = the mean effect size
D = the weighted mean effect size
E = corrected variance of the effect size
F = % of observed variance due to sampling error
G = 95% confidence interval around the effect size

effect sizes were found with pre-post research designs for school attitude (.49) and for the overall effect size (.33). The largest weighted mean effect size for comparison group research designs was school attitude (.20). Except for delinquency and school performance, all of the outcome variables across both types of designs fell in a 95% confidence interval that did not include zero. Findings with those confidence intervals can be interpreted as indicating that a nonzero effect would be expected between participation in the alternative school programs and school attitude, self-esteem, and all of the four outcome variables combined (the overall effect of attending the program).

Column F of Table 3 reports the percentage of observed variance due to sampling error. Hunter and Schmidt (1990) suggested that the percentage of observed variance due to sampling error is inversely related to the potential for finding moderator effects between the study characteristics and the effect size. Since the majority of the percentages are below 50%, a relatively high amount of variance across studies remained unexplained. It is possible that this remaining variance is due to other artifacts in the reviewed studies or some moderator variables (Schmitt and Klimoski, 1991). To explore this possibility, correlations were analyzed between the overall effect sizes and selected program characteristics, including racial heterogeneity, grade level, target population, daily length of the program, and duration of the program (Table 4). Recall that these program characteristics (or moderator variables) were discussed in other literature reviews as important in influencing outcomes of alternative school programs.

Table 4

Correlations of Effect Size with Selected Study Characteristics[a]

Study Characteristic	Comparison Group Effect Size	Pre-Post Effect Size
Sample Characteristics		
Racial Heterogeneity	.10,n=30, ns	-.14,n=34, ns
Grade Level	.08,n=27, ns	.29,n=33,.05
Target Population	.41,n=28,.01	.31,n=33,.04
Program Characteristics		
Daily Length of Program	-.03,n=22, ns	.45,n=16,.04
Duration of Program	-.29,n=11, ns	.18,n=13, ns

[a]Coding for Study Characteristics:
Racial Heterogeneity 1=None, 2=Racially Mixed Sample
Grade Level of Students 1=Elementary School, 2=Middle School, 3=High School
Target Population 1=None, 2=Yes
Daily Length of Program 1=After School, 2=Half A School Day, 3=Full School Day

The only significant correlate across both research designs was whether the program involved a specific target population. This correlation indicated that alternative schools targeting a specific population (primarily low school achievers or delinquents) have statistically significant higher effect sizes than programs not targeting specific types of students. Furthermore, the overall effect sizes of pre-post research designs are positively correlated with alternative high schools (compared to alternative middle and elementary schools), daily length of the program, and programs with specific target populations.

Alternative schools for delinquent students. Thirteen programs specifically targeted delinquent students. The original intent of this review was to focus on these thirteen programs. However, studies of these programs produced similar outcomes when compared to those studies not measuring delinquency in the voting method and the effect sizes for overall effectiveness, school performance, school attitude, and self-esteem.

Summary. The results present a fairly positive outlook for alternative education programs. While the vote counting method demonstrated that research designs with a pre-post methodology were more likely to find positive results than comparison group designs, the effect sizes provided evidence that alternative schools can have at least a small positive effect on school performance, school attitude, and self-esteem. Delinquency was the only variable for which the null hypothesis could not be rejected with zero in the confidence interval across both research designs. The low effect sizes in the comparison group designs should not discount the fact that most of the confidence intervals were positive and above zero. The assessment of

moderator variables also demonstrated that alternative schools targeting specific students produce more positive results. Even though two other pre-post moderators had significant correlations with overall effect sizes (the longer the daily length of the program the higher the effect size and the programs for high school students have higher effect sizes), these were not statistically significant for comparison group research designs.

Discussion and Conclusions

This review used meta-analysis to assess the findings of 57 alternative education programs in an effort to provide a more comprehensive summary of the alternative school literature than that found in prior narrative reviews. The review consisted of a vote counting method and the calculation of effect sizes to determine the overall effect of the program as well as the programs' ability to change delinquent behavior, school performance, school attitude, and self-esteem.

The results suggest that alternative education programs can have a small positive effect on school performance, school attitude, and self-esteem, regardless of research design. The highest pre-post and comparison group effect size was attitude toward school. This finding is consistent with prior research on alternative schools, which suggested that most students enjoy going to an alternative education program (Arnove and Strout, 1980; Ellison and Trickett, 1978; Duke and Perry, 1978).

The principal finding was that alternative schools have been unable to affect delinquent behavior. It is difficult to explain why this is so, given that school failure has been strongly related to future delinquency (Junger-Tas, 1992). Based on the findings here, it is speculated that even though alternative schools highly promote

positive school attitudes, their effect on school performance and self-esteem is not great enough to have an influence on delinquent behavior. That is, even though the students like going to the alternative school and appear to have performed well, these gains did not overcome other influences that may have had a greater effect on subsequent delinquency (e.g., family and peers).

The relationships between the moderator variables and the overall effect sizes suggest that alternative schools for low academic achievers or delinquents have higher overall effects than do undefined alternative schools. It is possible that these programs have developed a curriculum and structure around the needs of the target population, whereas other alternative schools end up with a mix of students with different problems and needs.

In addition, it appears that the research design played a major role in the conclusions reached by these studies. Both the voting counting method and the effect size method show that pre-post research designs more often turn up positive results than do comparison group designs. In all likelihood, pre-post research designs are less rigorous and more prone to internal validity threats (history, maturation, and statistical regression). Without a control or comparison group, it is not possible to determine how much of the effect was caused by the program and how much was attributable to other influences (Singleton, Straits, and McAllister, 1988; Babbie, 1986; Kerlinger, 1986; Cook and Campbell, 1979).

Methodological shortcomings continue to plague alternative school literature. These center on the lack of true experimental research designs and the lack of extended follow-ups. It was the original intent of this review to examine follow-up

studies, however, only three studies provided the necessary statistics to be included in the meta-analysis. This was particularly surprising, since what happens to alternative school graduates upon re-entry into the regular school (or mainstreaming) has been widely cited as of primary interest (Frazier and Baenen, 1988; Reilly and Reilly, 1983; Barr, Colston, and Parrett, 1977).

This review was greatly hindered by poor reporting practices. First, many studies had to be omitted because the required statistics were not provided. Second, some studies in the meta-analysis did not give detailed descriptions of the programs. For example, only half of the 57 programs reported the intensity (daily number of hours at the alternative school) and fewer still mentioned the duration (months or school terms in the program). The analysis of moderator effects of the sample was also limited due to sketchy sample descriptions which greatly inhibited the examination of the relationship between program and sample attributes on effect sizes. Third, there are very few published studies regarding the effectiveness of alternative schools. Most of studies included in the meta-analysis were found in ERIC as unpublished final reports. These studies contained many citations of other alternative school evaluations that could not be located. It is possible that the lack of published works is a result of the difficulty of publishing nonsignificant findings (Rosenthal, 1979). Regardless, more emphasis needs to be placed on disseminating alternative education research.

The present review has demonstrated that alternative education programs can be beneficial to students in specific target populations, even though the poor condition of the literature has limited the ability of this review to fully investigate the influence

of moderator variables on the effectiveness of these programs. While this review has shown that alternative schools have had small positive effects on attitudes and performance outcomes, little is still known about why some programs are more successful than are others.

Rationale for Current Study

While the meta-analysis found that alternative education programs have been able to positively affect school-related variables that are commonly linked to delinquent behavior, several questions still remain unanswered concerning the viability of alternative schools as delinquency prevention programs. These questions are centered on the appropriate target population, the further testing and development of a theoretical model of the alternative school process, and the exploration of possible predictors of program success.

Limitations of Prior Research

Findings from the meta-analysis suggested that programs targeting at risk delinquents or low school achievers were more effective than programs not focusing on specific subgroups of youth. However, the alternative education literature does not explore other issues that may explain why some youth are more successful than others. For example, all of the studies of programs for low academic achievers or delinquents reported that the program was developed for high risk students without assessing how well the program participants fulfilled the definition of the targeted population. Therefore, it was not possible to compare the outcomes of students within the target population to students who did not fit the criteria of the target

population. These shortcomings greatly limit the moderator findings of the meta-analysis that targeted groups perform better in alternative schools than the general student population.

In general, prior research has not provided a clear picture of program effectiveness for alternative education programs. The limitations of the alternative education literature consist of definitive findings on program effectiveness for subgroups of students, a lack of a theoretical framework, and a failure to determine predictors of program success.

Subgroups. Gold and Mann (1982) have been two of a very limited number of researchers who have studied the effects of attending an alternative school on separate subgroups of students. Their sample was composed of students who had histories of poor academic performance and disruptive behavior at school. Since their study focused on self-esteem, they split the sample into four groups of students based on the students' level of self-esteem and whether they attended an alternative school.

One group of students were identified as "beset." These students displayed high level of anxiety and depression during the first interview in the study. The beset students were placed into this group because they scored in the top third of an interview scale measuring these constructs. The other two-thirds of the students were assigned to a group called "buoyant." The alternative school and comparison groups in regular schools consisted of a similar proportion of beset and buoyant students. The beset students did report being slightly more delinquent than the buoyant students.

In Gold and Mann's (1982) study, the students were interviewed on three separate occasions. These interviews took place once early in the school year, again at the end of the school year, and a third time in the following fall. Gold and Mann found that buoyant students responded differently to the alternative school than the beset students. The beset students did not respond as positively to the alternative school experience. For instance, both groups of students believed at the time of the post-program interview that the rules at the alternative school were more flexible than in the traditional school, had a greater commitment to the student role, had a more positive attitude toward school, and performed better academically compared to the comparison groups. However, the positive changes persisted only in the buoyant students once the alternative school students returned to their traditional school.

Another major finding was that although buoyant students reported lower rates of school misbehavior and delinquency immediately following program completion, neither buoyant or beset students reported lower rates of delinquency and misbehavior at the third interview. In addition, positive changes achieved by the buoyant students in the alternative school were not associated with any changes in self-esteem.

Similar to the findings from the meta-analysis, the alternative education programs in Gold and Mann's study were able to positively affect school-related influences without affecting delinquency. Since the definition of their subgroups were based upon self-esteem, a variable whose importance they later questioned, it is possible that subgroups created from different constructs may produce more conclusive findings.

Theory. The alternative education literature has given little attention to any theoretical processes which may aid in explaining why these programs have limited success. Gold and Mann's (1982) model of the social psychological process of change has been the only model that has been proposed specifically for alternative schools. While this model has provided an adequate starting point for the development of theory, the constructs and theoretical relationships have not been widely utilized or tested in the alternative education literature.

Predictors of program success. The alternative education literature has not examined any pre-existing individual characteristics which may predict future program success. The prediction of program or treatment success is common for college programs (Rothstein, 1994; Graham, 1991), psychiatric programs (Piper, Joyce, Azim, and Rosie, 1994), and health-related programs and treatments (Marteau, 1994). The underlying assumption is that if it were possible to predict program success from an individual characteristic, then a program's referral and selection process could focus on those individuals with the given characteristic.

For example, Gold and Mann (1982) indirectly attempted to predict program success by splitting the sample into subgroups using self-esteem. If their beliefs about the validity of self-esteem as a predictor of program success would have been correct, an important implication of their study would have been that the selection criteria for an alternative school should include various measures of self-esteem to discover which students are buoyant and beset. The reasons for determining whether the students are buoyant or beset is twofold.

First, an alternative school with limited resources and a large number of students wanting to attend could select only buoyant students since these students would have been more likely to have been successful in the alternative school. Second, if alternative education program developers know which students are not successful in these types of programs, they could attempt to alter the program to accommodate the beset students.

Summary of the Current Study

The present study will test for differential direct and indirect effects of an alternative education program on students in a targeted "at risk" population to students who were not in the targeted population. This study addresses these questions using secondary data from an evaluation of an alternative education program. Although the alternative school participating in this study was created for a very definitive group of at risk students, program staff did not completely follow the target definition when recruiting students for the program. As a result, many of the students attending the alternative school did not fall into the at risk group. The research conducted here is based upon a belief that the students in the target population will perform differently in the alternative school than students not in the target population.

METHOD OF PROCEDURE

Research Setting

The research took place within the context of a larger research project funded by the Wayne County (Michigan) Department of Health and Community Services, Youth Services Division and the State of Michigan Department of Social Services. The larger research project began in the Fall of 1989 and ended in the Spring of 1992. The scope of the large scale research project was to evaluate the effectiveness of three different day treatment programs for youth who were at risk of becoming involved in serious delinquent behaviors. Two of these programs were alternative education programs and the third was a peer counseling program.

The large scale evaluation consisted of assessing several outcome variables (e.g., school attitudes, school performance and attendance, self-esteem, self-reported delinquency, and official delinquency). The research project employed an experimental research design. Students were randomly selected from a referral list generated by regular school teachers and the alternative school program staff to be in either an experimental or control group. Students in the experimental group attended the day treatment program for one semester and returned to the regular middle school. Control group students remained in the regular middle school. Data were collected for all students prior to the intervention, immediately following the

intervention, and one year following completion of the intervention. The evaluation tested for differences between participation groups and control groups at each data collection interval. The analyses were limited to participation/control group differences by program.

Even though data from two alternative education programs were collected in the larger research project, only one of the programs was included in the current study. The program that was selected was a newer program that was designed around the needs of delinquent students, whereas, the other alternative school was an existing program for low academic achievers and dropouts prior to the evaluation. In addition, staff from the older alternative school were reluctant to participate in the large scale evaluation and refused to alter their referral and selection procedures to accommodate the evaluation. This was in contrast to program staff from the newer alternative school who were interested in the evaluation and allowed evaluation staff to assist in developing referral and selection procedures.

The program that was chosen for this study was more intensive (students attended this program for the entire school day compared to half-days at the other program), had a longer duration (the selected program lasted approximately three weeks to one month longer), and provided other types of services for the students (group and individual counseling, tutoring). Furthermore, the decision was made to assess data from only one of the alternative schools because this study was interested in the effectiveness of an alternative education program on students in different target populations and between program effects may have confounded between research group effects.

Overview of the Alternative Education Program

The alternative education program participating in this study was designed to be an intervention for students who were at risk of failing school and becoming involved in serious forms of delinquent and criminal behaviors. The following section describes the referral process, program structure, daily curriculum, and program rationale.

The program was located in a densely populated area of Detroit, Michigan and was operated by a nonprofit community organization. The organization was founded during World War II to serve the needs of the growing Latino population in the city. At the time of its founding, the emphasis was on teaching English to immigrants and helping families adjust to living in the United States.

Throughout the years, this organization enhanced its services to provide a variety of community services. Some of these services were family and youth counseling, neighborhood outreach programs, nursery school, academic tutoring, runaway services, cultural, recreational and civic activities as well as referrals to other agencies for job training and employment opportunities.[14]

Program Definition

The alternative education program fulfilled Smith's (1974) and Raywid's (1983) definition of an alternative school consisting of: (1) a location apart from the traditional school; (2) voluntary participation; and, (3) a structure reflecting the needs of the surrounding community. First, the alternative school was housed in a structure

---

[14]The program description was based upon agency documents, program proposals, and qualitative observations.

separate from the middle school in that community. The structure was a renovated bank with a large recreation area, a small second floor, and a basement area. The recreation area also served as the cafeteria and was used when convening all of the students. There were two small rooms on the first floor next to the recreation area. One of these rooms was an office for the counselors and the other was a classroom that seated approximately twenty students. The second floor was used for the main office. The basement was divided into a small classroom (also holding about twenty students) and small offices for program staff. Both of the classrooms were arranged in a traditional manner with the teacher seated in the front of the room with the students' desks arranged in neatly aligned rows.

The staff consisted of a director, coordinator, two full-time teachers, and three counselors. In addition to these staff, there were several volunteers who provided tutoring services to individual students. The administrative staff, counselors, and one of the teachers were employed by the sponsoring organization. The other teacher was employed by the local public school district and was assigned to the alternative school.

Second, all of the students participating in the alternative education program had volunteered for the program. As part of the referral process, program staff met with parents or guardians of potential students to discuss the contents of the program and how the student may benefit from participating. In order to be considered for enrollment, the student and the parents must have signed a contract stating that the student and parents understood the rules of the program and agreed to cooperate

throughout its duration. Further, a student could refuse to attend the alternative school or quit at any time without being punished by the regular school.

Third, the alternative school was structured around the needs of the surrounding community. The community is predominantly Hispanic with many heads of households speaking only Spanish. To accommodate these needs, almost all the program staff were bilingual and were of Hispanic descent.

Program Referral and Selection

The county agency which funded the alternative education program developed "at risk" criteria for alternative school staff to follow when recruiting and selecting students for the program. These criteria consisted of having a police contact (e.g., being picked up by the police and taken to the local police precinct for delinquent behavior), having behavior problems in school, and performing poorly in school. The students had to meet at least one of these criteria to be eligible for the program.

Youth were referred to the alternative school by teachers, principals, and counselors from the regular middle school. These staff were instructed to refer students having problems at school (behavior or academic) who might benefit from the alternative school experience.

At the beginning of each school semester, a list of names were compiled by a counselor at the middle school. Program staff met with this counselor and reviewed the school records of each referred student to screen out those students who: (1) were not performing poorly in school; (2) did not have disciplinary problems; and, (3) had

a learning disability or were in special education classes.[15] From the at risk eligibility list, program staff contacted the parents of perspective students by mail or telephone to arrange a meeting time to further discuss the program.

An organizational meeting describing the program was held at the middle school for students and parents. During this time, program staff met with the parents on an individual basis to answer any specific questions. Those parents who could not attend this meeting were given an opportunity to arrange a meeting with program staff at the alternative school or schedule a home visit. At this meeting, the parents were to decide if they wanted their child to be eligible to participate in the program.

Once the parents had decided to allow their child to participate in the program, they were asked to sign a parental permission form. The permission form contained a brief overview of the program, described the responsibilities of the youth and the parents, and gave permission for the youth to participate in the program and an accompanying study (the large scale evaluation).

Once a list of potential program participants was created, students were randomly assigned to a participation group and a control group.[16] Program staff were given a list of eligible students that showed which students had been assigned to the participation and control groups. Program staff notified the parents of both participation and control group students. The parents of the control group were

---

[15]The alternative school staff felt that they could not provide adequate services for learning disabled and special education students. Hence, they were not eligible to participate in the program.

[16]The random assignment was performed by the program evaluators who conducted the larger research project.

informed that there were more eligible students than available positions in the program, therefore, a lottery was held and their child was not selected to participate. These parents were thanked for allowing their child to participate and were encouraged to continue to support their child. Parents of the students in the participation group were informed that their child was selected to attend the alternative school and were told when the program would begin.

Program Structure

The students attended the alternative school five days a week for one academic semester and attended the conventional middle school only for special assemblies. Other than special events, the students had limited contact with the regular middle school. The alternative school operated under a similar schedule as the regular middle school. Transportation was provided by program staff to and from the alternative school and to and from the students' home.

At the alternative school, the students were divided into two groups depending upon grade level and achievement level. One of these groups met in the classroom on the first floor and the other met in the classroom in the basement. While the students were separated, they were instructed in core courses such as math, science, social studies, and English. Students having problems with a certain subject or area received tutoring on an individual basis.

The afternoon hours of the program included several activities, depending on the day of the week. For example, one day the students stayed in the large recreation room for an art class while another day the afternoon was used for an extended physical education class. During the afternoon hours, group counseling sessions were

held so students could discuss individual problems or were given situations which involved making right or wrong decisions based on group decision making processes. Additional individual tutoring and counseling sessions were also available during the afternoon.

Program Goals and Objectives

The overall goal of the program was to decrease delinquency through a positive school experience. The program was believed to have an indirect effect on delinquency through improved academic performance, self-esteem, attachment to school, and commitment to school. An increase in these variables was believed to produce a decrease in delinquent behavior. Furthermore, improvement in academic performance would lead to increased self-esteem, attachment to school, and commitment to school which, in turn, would decrease school disruption and delinquent behavior.

The alternative education environment was theorized to decrease delinquent activity through four mediating processes (Figure 3).[17] First, the students were taken out of the traditional school and placed in the alternative school. In doing this, the students were removed from a negative and stigmatizing environment and went to a friendly and positive environment. The positive and caring environment of the

---

[17]The program model was constructed through discussions with the alternative education program staff which were mostly consistent with Gold and Mann's alternative school change model (Figure 2). The difference between the two models is that the mediating process of "Awareness of the Greater Flexibility of the School's Program" was deleted from this model. Program staff did not mention this process as an important aspect or goal of the alternative school program.

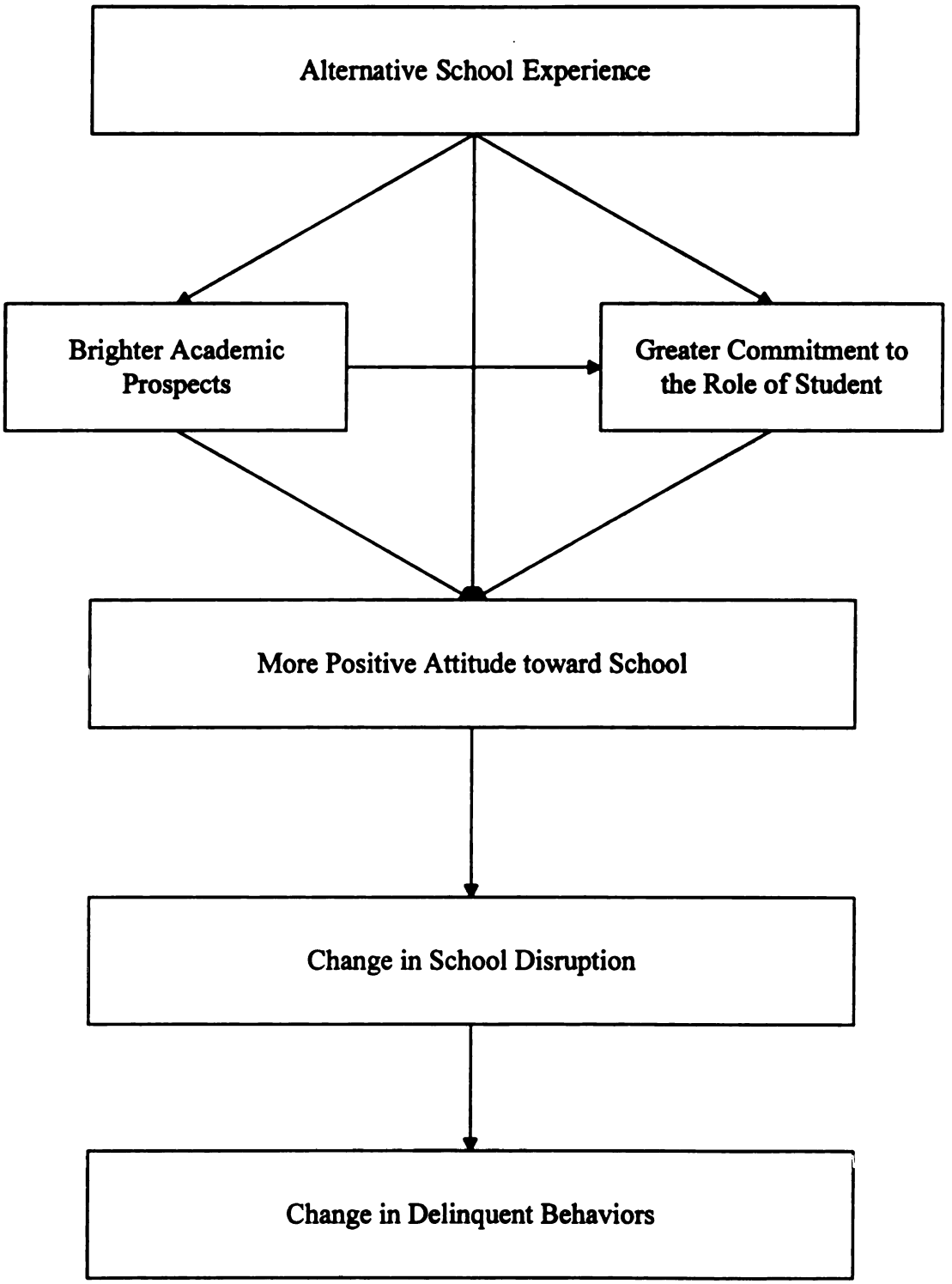


Figure 3: Alternative School Program Model of Change

alternative school would help the students believe that they have legitimate chances of being successful students.

Second, the lower student-to-teacher ratio and the individualized instruction would lead to better grades (performance). The students would be given general assignments and would be allowed to work at their own pace. The decreased pressure to work at the same pace as the entire class (as in traditional schools) would lessen the stigmatism of being behind classmates. Students would be able to observe their individual progress and would become more committed to the student role (e.g., positively assessing their academic performance, receive better grades, devote more effort to school work, and be more satisfied with their school achievements).

Third, as the learning experience became more positive, the students would become more attached to program staff and would like going to school. Fourth, the students would become less disruptive at school the more their attitudes toward school would improve. The changes in academic prospects, commitment to the student role, attitudes toward school, and disruptive school behavior would extend to a decrease in delinquency in the community.

Design

The research was conducted using a 2 X 2 X 3 repeated measures design. That is, there were two groups (participation and control) by two sample conditions (target condition and nontarget condition) by three time periods (pre-program, post-program, and one year following program completion). The subjects were randomly

assigned to the participation or control group. The students were also assigned to a condition based upon the pre-established criteria for the target population.

There are several advantages to using a repeated measures research design. A longitudinal design would allow for the impact of the intervention to be more fully understood by looking at pre-existing conditions. This would help verify that comparision groups are equivalent; allow for the establishment of baseline measures; afford the investigation of interactions between types of individuals; establish eligibility for inclusion in the study; and estimate the impact of differential attrition from the treatment conditions (Loeber and Farrington, 1994).

Furthermore, the use of long-term follow-up information could facilitate the demonstration of effects of the intervention that were not immediately apparent. This would also allow for the comparison of short-term to long-term effects, and the investigation of the developmental sequences of the intervention (Loeber and Farrington, 1994).

Measures

This study evaluated the effectiveness of an alternative school for students falling into an at risk category and students not meeting the at risk criteria. The measures employed here were adapted from prior studies assessing the effects of alternative school programs. Again, all of the following measures were collected at pre-, post-, and one year follow-up intervals.

Interview Measures

The questionnaire interview was constructed to measure the link between school-related perceptions, self-esteem, and self-reported delinquent behavior (see Appendix B). The pool of items were obtained from studies looking at similar phenomena (Elliott, Huizinga, and Ageton, 1985; Gold and Mann, 1984; Hirschi, 1969). This questionnaire interview employed a structured format of 61 items. These items were fixed-alternative except for the self-reported delinquency items. The self-reported delinquency items asked the respondent to report the actual number of times she/he had participated in various behaviors. The dimensions and related items are presented below.

Attitudes toward school. The construct of "attitudes toward school" was based several items that measured students' perception of teacher support, academic prospects of success, perceptions of stigma in school, perceptions of the student role, and general attitudes toward school.

The responses to the interview items were coded in a way that would reflect the amount of positiveness of the students' attitudes. The responses were coded with a higher number if the student felt more positive about the item. There were nine items in Part One of the questionnaire which represented negative attitudes toward school, these items were reversed coded so that they would be consistent with the direction of the scale.

Since not all of the items used the same number of possible responses, z scores were computed for each item (Bohrnstedt and Knoke; 1988). Average scale scores

were calculated by dividing the sum of the item *z* scores and dividing by the total number of items in the scale.

The reliability of the scale was measured to assess the degree to which each of the individual items share in the construct which it is designed to measure (Singleton et al., 1988). That is, reliability was measured by a coefficient of determination which represented the proportion or percentage of variance shared by the number of items in the scale (Kerlinger, 1986). Reliability is generally measured using coefficient alpha (Cortina, 1993).

Table 5 presents the reliability coefficients for each scale at each data collection point. The scale representing students' attitudes toward school is highly reliable at each data collection point (.76 at pre-, .82 at post-, and .77 at the one year follow-up).

Self-esteem. Items pertaining to youths' perception of self were operationalized through the Rosenberg-Bachman Measure of Self-Esteem (Bachman, 1970). This measure (Part Three) contained six items and was intended to measure conscious self-esteem. These items were created to represent how the students' feel about themselves as individuals.

Similar to the attitude toward school scale items, the responses were coded to reflect the students' positive self-esteem. Items that suggested negative self-esteem were reversed to maintain directional consistency in the scale. Thus, high scale scores depicted positive self-esteem and low scores represented low self-esteem.

Table 5

Scale Reliability Coefficients

Scale	Number of Items	Time		
		1	2	3
Attitude Toward School	21	.76	.82	.77
Self-Esteem	6	.53	.59	.63
School Disruption	5	.75	.78	.79
General Delinquency	23	.88	.89	.86

The self-esteem scale was created by summing the responses and dividing by the number of total number of items. The alpha coefficients for this scale were lower than the attitude toward school scale (.53 at pre-, .59 at post-, and .63 at the one year follow-up)(Table 5).

Self-reported delinquency. Part Four of the questionnaire contained a version of the Self-Report of Delinquency Measure developed by Elliott and Ageton (1980). This measure contained 28 items focusing on person, property, school, drug, weapon, and status offenses. Respondents were asked to report how many times since the beginning of the school year or prior school semester they had committed each act for the three data collection points. There were two scales within the self-report measure of delinquency. These were acts of school disruption and general delinquency (Figure 4).

The items in the self-reported delinquency scales were recoded as follows: never = 0; once or twice = 1; once or twice a month = 2; once every two to three weeks = 3; once a week = 4; two to three times a week = 5 (Cernkovich and Giordano, 1992). The numerical values were formulated by calculating the implied frequency over a four month period. Scale scores were calculated for both subscales by summing the recoded item scores and dividing by the number of items in the scale.

Table 5 reports the alpha coefficients for school disruption and general delinquency. These alpha coefficients were very consistent across data collection points. School disruption had alpha coefficients of .75, .78, and .79. The alpha coefficients for the general delinquency scale were .88, .89, and .86.

School Disruption

(1) Skipped class not including whole days.
(2) Been told to bring your parents to school for something you did wrong.
(3) Not been allowed to go to school until the superintendent or principal told you that you could go again (been suspended).
(4) Skipped a full day of school.
(5) Been sent to the principal's office for bad behavior.

General Delinquency

(6) Gone onto someone's property when they didn't want you to be there or without their permission.
(7) Gone into a house of building when you weren't supposed to be there.
(8) Taken some part of a car or some gasoline.
(9) Taken something not belonging to you worth less than $2.00.
(10) Drank beer or liquor.
(11) Ran away from home.
(12) Take something from a store without paying for it (regardless of the price).
(13) Smoked marijuana.
(14) Taken things worth less than $50.00.
(15) Seriously threatened to hurt someone.
(16) Hurt someone badly enough for him/her to need bandages or a doctor.
(17) Carried a gun or knife other than for hunting.
(18) Taken something not belonging to you worth over $50.00.
(19) Used or threatened to use a weapon to get something from a person.
(20) Taken something from a person by force (may or may not involve a weapon).
(21) Beaten up on somebody or fought someone (physically).
(22) Used crack or cocaine.
(23) Bought or gotten something that was stolen by someone else.
(24) Broken into a place and stolen something.
(25) Taken illegal drugs or pills, other than marijuana or crack/cocaine.
(26) Hit a member of your family (in anger).
(27) Set fire to someone else's property.
(28) Taken a car without the owner's permission.

Figure 4: Specific Delinquency Scales

Since this study is concerned with examining group differences in general delinquent behaviors, not specific items in the delinquency scales, a further test was conducted to assess the intercorrelations of these two subscales of delinquency across time (Table 6). Given the possibility that these scales may be highly correlated, it may be necessary to create one delinquency scale from the two subscales. These correlations were fairly high (.76, .76, and .71) and justify combining these subscales into one overall delinquency scale.[18]

School Records

Academic performance. Previous school term grades were collected for each student for the three data collection points. Only the grades from core courses (math, English, social studies, and science) were obtained.[19]

The grades were coded in terms of success. For example, a grade of "A" was assigned a value of four, a grade of "B" was given a value of three, a grade of "C" was given a value of two, a grade of "D" was given a value of one, and an "E" was given a value of zero.[20] From these values, the grades were computed into grade point averages by summing the values and dividing by the number of values. The grade point averages ranged from 4.00 to 0.00.

---

[18]Given the high intercorrelation between subscales of delinquency, combining subscales of delinquency into one general scale is a commonly accepted practice. Delinquency scales containing broad sample of types of delinquent behaviors typically outperform other delinquency scaling procedures with more restricted content (Gottfredson, McNeil, and Gottfredson, 1991; Hindelang, Hirschi, and Weis, 1981).

[19]The class grades from the core courses were the only grades included in the study in order to maintain consistency when comparing grades across individuals.

[20]The regular middle school assigned a grade of "E" for class failure rather than the more traditional "F".

Table 6

Correlations between General Delinquency and School Disruption*

	Data Collection Point		
	1	2	3
Correlation Coefficient	.76	.76	.71

*Correlations are corrected for attenuation.

Table 7

Correlations between the Official School Records

School Record	G.P.A.	Attendance	Stand. Tests
		Pre-Program	
Grade Point Average	1.00		
Attendance	.40*	1.00	
Standardized Tests	.29*	.05	1.00
		Post-Program	
Grade Point Average	1.00		
Attendance	.43*	1.00	
Standardized Tests	.17	.02	1.00
		One Year Follow-up	
Grade Point Average	1.00		
Attendance	.41*	1.00	
Standardized Tests	.38*	.08	1.00

*p. $<.05$

possession of illegal drugs or alcoholic beverages, robbery, burglary, theft or larceny, extortion, coercion, vandalism or malicious destruction of property, interference with or intimidation of school personnel, false alarms, interference with the movement of pupils in or to and from school, and possession of electronic beepers.

Violent acts consisted of dangerous behaviors that may place an individual or individuals in immediate harm. These included possession of a gun, knife, or any other lethal weapons, use of a weapon or a dangerous object, battery of an employee, significant destruction of property, sale or distribution of illegal drugs, and battery of a student.

Unfortunately, the utilization of school discipline records was available only for the pre-program assessment. The school district maintained a policy that the discipline records of a student would remain at the original school in the case of a student transferring to a different school within or outside the school district. There were several cases in which students changed schools several different times during the larger research project. The collection of these data proved impossible for a number of cases due to the difficulty of determining which schools a student had attended and the existence of any discipline reports at the various schools. Furthermore, seriousness of the school offenses was difficult to assess, due to little systematic maintenance of school discipline records. The record keeping systems varied among schools with each school having a different approach to maintaining these records.

Police Records

Police records were collected from the office of the police central records from the city police department. These records were based on police contacts with the students. The records represented a student being brought to the local precinct. Once at the precinct, juveniles were either transferred to the county's youth home, turned over to another agency (social service or other law enforcement agency), released to an adult, or discharged from police custody. Data collected from the police records were the date of the offense, offense type, and police disposition.

Self-Reported Delinquency vs. Official Delinquency

There is important distinction between the use of self-reported delinquency and official delinquency. Self-reported delinquency consists of behaviors that are deliberately committed by the youth and are illegal or in violation of the juvenile code (Gold and Mann, 1984). Whereas, official delinquency refers to a small amount of delinquent behaviors whose perpetrators are apprehended by the police and recorded in the juvenile justice system's records. The primary difference between the two constructs is that self-reported delinquency is a reflection of the youth's behaviors while official delinquency is a reflection of the behavior of the youth, the police, and the juvenile justice system.

Gold and Mann (1984) suggested that alternative schools may have different affects on self-reported delinquency and official delinquency due to the small relationship between the two. For example, an alternative education program might reduce students' actual delinquent behaviors. However, police and court officials might view the alternative school as a special school for delinquents and scrutinize the

students for minor offenses based on their prior official records. It is more than likely that alternative schools would not have any affect on official delinquency because the official record is an insensitive gauge of delinquent behavior (Huizinga and Elliott, 1986).

Data Collection Procedures

Pre-Intervention Data

Following the signing of the parental permission during the program recruitment process and prior to the random selection process, evaluation staff conducted pre-assessment interviews which asked the students a variety of questions concerning school-related attitudes and self-perception and self-reported delinquency. Data from official school records were collected after the referral and selection process. These school data included previous academic term grades of the core required classes (English, math, science, and social science), scores on standardized academic achievement tests, attendance records, and school discipline records.

Post-Intervention Data

During the last week of the school semester, post-intervention data were collected for the participation and control groups. The same data were collected as in the pre-intervention stage: interviews and school records. The interviews took place at the alternative school (for the participation group) and at the regular middle school (for the control group). In cases where students had dropped out of school, evaluation staff conducted interviews at students' homes.

Official school data were also collected following the end of the school semester after the records had been finalized. Again, these school data included previous academic term grades from the four required core courses, scores on standardized academic achievement tests, attendance records, and school discipline records.

Similar data from interviews and school records were collected approximately one year following the students' completion of the alternative school program. Also at this time, data were collected from police records. These data were collected by evaluation staff and consisted of searching through the automated database at the city police department's central records division. Data from police records contained the date of the offense, type of police contact, type of offense, and police disposition for all recorded incidents of police contacts with youth in the study group.

Subjects

The subjects in this research were middle school students at the time they were referred to the program. All of these students were from the same middle school. The students were made available for the study through referrals to the alternative education program from teachers, principals, and counselors from the participating middle school. These individuals were asked to refer students who were having trouble in school and may benefit from attending the alternative school. There were no demographic specifications established for who could be referred to the program, although the alternative school staff sought to have an equal distribution of students across sex, age, and school grade.

Further, participation in the alternative school and the research project was entirely voluntary. If a student attending the alternative school or the student's parents did not want to participate in the program or the research, he/she returned to the traditional school without any punishment. If a student or the student's parents did not want to participate in the research project, data were not collected for that student.

The study group was composed of three separate cohorts of students. The first cohort attended the alternative school during the Winter/Spring school semester of 1990 (January through June), the second cohort attended during the Fall school term of 1990 (September through December). The third cohort participated in the program during the Winter/Spring school semester (January to June of 1991).

There were two additional cohorts which were not included in this study. One of these cohorts attended the program during the Fall school semester of 1991 (September through December). The principal investigators of the larger research project decided not to include these students in the evaluation because the program started very late in the semester. The other cohort participated in the project during the Winter/Spring school semester of 1992 (January through June). Due to the expiration of the research funding of the large scale evaluation, one year follow-up data were not collected for these students.

The study group consisted of 154 students (Table 8). Eighty (52%) of these students made up the alternative school participation group and 74 (48%) were in the control group. The majority of the sample were males (70%). The ages of students

Table 8

Sample Demographic Characteristics*

Demographic Variable	Participation Group	Control Group	Row Total
Totals	80	74	154
Gender			
Males	56 (70%)	52 (70%)	108 (70%)
Females	24 (30%)	22 (30%)	46 (30%)
Age			
11 Years Old	0	2 (3%)	2 (1%)
12	20 (25%)	22 (29%)	42 (28%)
13	34 (42%)	25 (34%)	59 (38%)
14	17 (21%)	17 (23%)	34 (22%)
15	3 (4%)	5 (7%)	8 (5%)
Missing	6 (8%)	3 (4%)	9 (6%)
Grade in School			
6th	6 (8%)	5 (7%)	11 (7%)
7th	71 (88%)	63 (85%)	134 (87%)
8th	3 (4%)	6 (8%)	9 (6%)

* Percentages are column percents for the specific variable.

in the sample range from eleven to fifteen years old with the modal age being thirteen (39%). Further, the majority of students were in the seventh grade (87%).

Development and Comparison of the Research Groups

The creation of the target and nontarget sample conditions consisted of reviewing the program definition of at risk and assigning students to one of four research groups based on the at risk criteria. The definition of the at risk target population was created by the funding agency of the alternative school program. This definition was primarily based on official school and police records.

Definition of target population. The definition for a target population focused on youth who were "at risk" of participating in major forms of delinquent behavior. The target population was to consist of students who were beginning to show signs of becoming seriously delinquent (e.g., having a high school absentee rate, failing school, being disruptive in school, and had participated in minor forms of delinquent behavior). Therefore, it was important that program participants did not already have criminal records or had dropped out of school.

There were two separate ways a youth could be defined as at risk. First, verification by school personnel, police, or the youth that the youth had been apprehended at least once by police; or by verification from school personnel that the student had been cited for an "illegal behavior" or a "violent act" as defined by the public school system. Second, the youth must have had documentation regarding at least two of the following conditions: (1) documented school discipline problems; (2) documented absences from at least twenty classes in the current marking period, or, if less than one month had passed in the current marking period, than at least twenty

absences in the immediately preceding marking period; (3) had tested at least two grade levels below the current grade level on standardized math and English tests; and, (4) had been at least one year behind in grade level.

Assessment of target population. One part of the larger evaluation was to determine the extent that program participants fit the target definition. Table 9 presents a summary of these earlier findings.[21] Based on this table, less than 50% of the students in this study met part of the at risk criteria while approximately one-third of the students did not have any contacts with police or school discipline problems. The low number of students meeting the at risk criteria afforded the opportunity to create four separate research groups.

Creation of research groups. Table 10 presents the results of the assignment of the students to the four research groups. There were sixty-one students (42% of the sample) who met the definition of at risk and were assigned to the target condition. Of these sixty-one students, 39 attended the alternative school and were placed in the target-program group (64% of the students meeting the at risk criteria). Twenty-two of the 61 students were in the target-control group (36% of the students meeting the at risk criteria).

Further, there were 84 students (58% of the total sample) who did not meet the at risk criteria and were assigned the nontarget condition. Thirty-seven of these students attended the alternative school and were placed in the nontarget-program group (44% of the students not meeting the at risk criteria). There were 47 students in the nontarget group who did not attend the alternative school and were placed in

---

[21]The larger evaluation made this assessment using all five of the student cohorts.

Table 9

Assessment of At Risk Definition*

	Participation	Control
Number in Group	100	94
Had at least one documented school discipline report*	59 (59%)	53 (53%)
Self-reported at least one police contact	14 (14%)	11 (12%)
Had at least one documented police contact	10 (10%)	6 (6%)
At Risk Criteria:		
School Report	40 (40%)	44 (47%)
Police Contact	4 (4%)	7 (7%)
School and Police	19 (19%)	9 (10%)
None	37 (37%)	34 (36%)
Total	100	94

*This table was adapted from Bynum, Cox, and Davidson, 1992. Their evaluation made this assessment using all five student cohorts.

Table 10

Crosstabs of Sample Condition by Program Group

	Sample Condition		
Program Group	Target	Nontarget	Row Total
Participation	39	37	76 (52%)
Control	22	47	69 (48%)
Column Total	61 (42%)	84 (58%)	145*

*Nine students from the study sample were omitted because of missing pre-program data which did not allow for them to be assigned to a sample condition

the nontarget-control group (56% of the students not meeting the at risk criteria). There were nine students with incomplete pre-program data. Since it was not possible to assign these students to one of the four research groups, they were omitted from study.

Table 11 presents the gender, grades in school for the two sample conditions along with the group means of age, school attitudes, self-esteem, self-reported delinquency, grade point average, school attendance, and the academic standardized test scores. The means of the interview scales and school records were taken from the pre-program assessment.

This table shows that there were slight demographic differences between the students in the two sample conditions. There was a higher percentage of females in the nontarget condition (33% in the nontarget condition and 25% in the target condition). Also, the students in the target condition were in the higher school grades (11% of the target condition consisted of 8th graders compared to only 2% of the nontarget condition).

T-tests were employed to test for mean differences between the two sample conditions. As can be seen in Table 11, students in the target conditions were older (13.8 to 13.3), had less positive school attitudes, reported participating in more delinquent acts, had a lower grade point average, and missed more days of school.

Tables 12 and 13 present the same demographic characteristics and the mean averages for the program and control groups within the sample conditions. There were no statistically significant differences between the program and control groups in the target or the nontarget conditions.

Table 11

Sample Condition Pre-Program Characteristics

Characteristic	Sample Condition	
	Target	Nontarget
Gender[a]		
Males	46 (75%)	56 (67%)
Females	15 (25%)	28 (33%)
Grade in School[b]		
6th	4 (7%)	5 (6%)
7th	50 (82%)	77 (92%)
8th	7 (11%)	2 (2%)
Age*	13.8	13.3
Interview Scales		
School Attitudes*	-0.01	0.14
Self-Esteem	3.75	3.83
Delinquency*	0.70	0.32
School Records		
Grade Point Average*	1.17	1.63
Attendance[b]*	44	27
Standardized Tests	712	711

* Difference is statistically significant at p. $< .05$

[a] Percentages are column percentages for that characteristic

[b] Measured by number of school days missed

Table 12

Within Target Condition Pre-Program Characteristics

	Program Group	
Characteristic	Participation	Control
Gender[a]		
Males	29 (74%)	17 (77%)
Females	10 (26%)	5 (23%)
Grade in School[a]		
6th	3 (8%)	1 (5%)
7th	33 (84%)	17 (77%)
8th	3 (8%)	4 (18%)
Age	13.7	13.8
Interview Scales		
School Attitudes	-0.11	0.06
Self-Esteem	3.75	3.76
Delinquency	0.67	0.76
School Records		
Grade Point Average	1.23	1.08
Attendance[b]	42	47
Standardized Tests	703	724

* Difference is statistically significant at p. $<.05$

[a] Percentages are column percentages for that characteristic

[b] Measured by number of school days missed

Table 13

Within Nontarget Condition Pre-Program Characteristics

	Program Group	
Characteristic	Participation	Control
Gender[a]		
Males	24 (65%)	32 (68%)
Females	13 (35%)	15 (32%)
Grade in School[a]		
6th	2 (5%)	3 (6%)
7th	35 (95%)	42 (90%)
8th	0	2 (4%)
Age	13.2	13.4
Interview Scales		
School Attitudes	0.23	0.08
Self-Esteem	3.88	3.79
Delinquency	0.26	0.36
School Records		
Grade Point Average	1.65	1.61
Attendance[b]	22	30
Standardized Tests	717	708

* Difference is statistically significant at $p < .05$

[a] Percentages are column percentages for that characteristic

[b] Measured by number of school days missed

Summary. The differences in the official criteria for program referral and the actual referral and selection process has allowed for the creation of four unique research groups. Less than one-half (42%) of the students in the sample fulfilled the criteria for being defined as an at risk student. The pre-program differences between the target and nontarget conditions were expected (the students were older, did not like school as much, were more delinquent, and were lower academic performers than the students in the nontarget groups). While there were pre-program differences between the target and nontarget study groups, there were not pre-program differences between the participation and control groups for the sample conditions.

Subject Attrition

Participant attrition is a problem for most research that requires measurement at two or more points in time (Graham and Donaldson, 1993). High attrition rates can pose a threat to internal validity and external validity (Cook and Campbell, 1979). Internal validity can be threatened when a program effect was due to the different kinds of subjects who dropped out of the treatment group during the experiment. This type of threat to internal validity may result in a selection artifact, since the research groups were composed of different kinds of subjects at the post-program assessment (Cook and Campbell, 1979). Biases in what kinds of subjects drop out of the study can also threaten the generalizability of the study (Cook and Campbell, 1979). For example, prevention programs that have shown positive results could have been accounted for by subject attrition. Also, it can be argued that a failure to find program effects could also be the result of differential attrition (Graham and Donaldson, 1993).

Given that the population of this study were middle school students who were at risk of failing school and becoming involved in serious delinquent activity, there was a high likelihood that complete data would not be available for all students at each data collection point. There were several reasons for the potentially high attrition rate. First, many students had dropped out of school or had moved out of the school district prior to the one year follow-up. Second, several of the students had changed schools within the school district several times and it was extremely difficult for evaluation staff to collect complete school records from every school the youth had attended. Third, a few of the students were in juvenile detention, jail, prison, or were in hiding because of felony arrest warrants.

High subject attrition rates have been common in prior alternative education research. For example, Trickett, McCohahay, Phillips, and Ginter (1985) reported that they were able to use 51% to 53% of the cases during a year one assessment due to incomplete information. Similarly, Reilly, Reilly, and West (1982) had a study attrition rate of 59%.

Interview data. Table 14 presents the number of completed student interviews at each data collection point. Of the 145 students in the study group who completed interviews at the pre-program assessment, 127 (88%) were interviewed immediately following completion of the program. The number of students who were not interviewed at this time point was similar across the four study groups (87% in the target-program group, 86% in the target-control group, 86% in the nontarget-program group, 89% in the nontarget-control group).

Table 14

Summary of Missing Interview Data

Research Group	Data Collection Point		
	Pre-Program*	Post-Program*	One Year Follow-up*
Target-Program	39 (100%)	34 (87%)	17 (44%)
Target-Control	22 (100%)	19 (86%)	12 (55%)
Nontarget-Program	37 (100%)	32 (86%)	24 (65%)
Nontarget-Control	47 (100%)	42 (89%)	30 (64%)
Totals	145 (100%)	127 (88%)	83 (57%)

*Percentages represent the total of present data for that group.

Out of the 145 students in the study sample, 83 (57%) completed one year follow-up interviews. A higher percentage of the study dropouts were from the target condition. Forty-eight percent of the target condition was interviewed one year following completion of the program compared to 64% of the nontarget group. Within the target condition, interview data were available for 44% of the students who attended the alternative school and for 55% of the students who did not attend the program.

School records. Table 15 presents the available school records data at each data collection point. The percentage of existing data for school records is very high across the research groups at each data collection interval. Ninety percent of the 145 cases had school records data at both of the post-program assessments.[22]

Assessment of Potential Biases from Missing Data

Four basic questions have been proposed for testing whether attrition is a threat to the validity of a study (Hanson, Collins, Malotte, Johnson, and Fielding, 1985). These are:

1. Are those who drop out different from those different from those who stay on pretest values of the dependent variables and on demographic characteristics?

2. Do those who drop out show different patterns across time on the dependent variables than those who stay?

3. Are there differences in rates of attrition conditions?

---

[22]Ten of the 145 students did not have school records data at the pre-program assessment. These were students who had moved into the school district from another school district at the beginning of the school year.

Table 15

Summary of Missing School Records Data

Research Group	Data Collection Point		
	Pre-Program*	Post-Program*	One Year Follow-up*
Target-Program	34 (87%)	34 (87%)	34 (87%)
Target-Control	22 (100%)	19 (86%)	19 (86%)
Nontarget-Program	36 (97%)	36 (97%)	36 (97%)
Nontarget-Control	43 (91%)	42 (89%)	42 (89%)
Totals	135 (93%)	131 (90%)	131 (90%)

*Percentages represent the total of present data for that group.

4. Are pretest scores for those who drop out different among conditions?

Researchers have generally concluded that if attrition rates are not different between the program participation and control groups and if the interaction of program and attrition rate is not significant, then observed program effects are probably accurate and not due to attrition artifacts (Graham and Donaldson, 1993).

These questions were assessed through three separate analyses. First, a logistic regression procedure was used to determine if there were differences between those students who dropped out and those were remained in the study through the one year follow-up period on the pretest dependent variables (school attitudes, self-reported delinquency, grade point average, school attendance, standardized test scores), demographic variables (gender and grade in school), program groups (participation or control groups), and sample conditions (target or nontarget conditions).

Table 16 presents the results of the logistic regression analysis for missing data. The dependent variable was coded zero if the case was missing interview data at the one year follow-up period and a one if the interview data were not missing. None of the pretest variables, demographic variables, or conditions had statistically significant betas. Hence, it was possible to conclude that the project attrition was a random process and may not affect any observed program effects.

Two separate sets of t-tests were conducted to further confirm the findings from the logistic regression analysis that the subject attrition was random across study groups. The first set of t-tests tested for mean differences within each of the four

Table 16

Logistic Regression Estimates to Predict Missing Interview Data

Variables	B	S.E.	df	Sign.
Pre-School Attitude	.0226	.5257	1	.9656
Pre-Self Report Delin.	-.6403	.8059	1	.4269
Pre-Grade Point Aver.	-.0208	.2917	1	.9431
Pre-School Absences	-.0038	.0094	1	.6836
Pre-Stand. Acad. Tests	-.0041	.0054	1	.4431
Gender	.3261	.4385	1	.4571
Grade in School	.0135	.6445	1	.9833
Program Group	-.1821	.3972	1	.6467
Sample Condition	.2561	.4574	1	.5756
Constant	3.1158	5.1005	1	.5413

	Chi-Square	df	Significance
-2 Log Likelihood	164.423	116	.0021
Model Chi-Square	3.976	9	.9130
Improvement	3.976	9	.9130
Goodness of Fit	128.473	116	.2019

research groups between those students who dropped out of the study and those who did not for the same dependent variables that were used in the logistic regression (Table 17). There were no statistically significant differences within each of the four research groups. These findings support the conclusion from the logistic regression analysis that there subject attrition was random within all four research groups.

The second set of t-tests tested for mean differences at the pre-program assessment within the target and nontarget conditions (Table 18). This test was performed in order to maintain that there were no differences between those students who attended the alternative school and those students in the control group prior to the beginning of the program. These tests were similar to those performed earlier regarding pre-test differences within research groups (see Tables 12 and 13). As can be seen in Table 18, there were no statistically significant mean differences between students who attended the alterative school and those students in the control group for both the target and nontarget conditions.

These three analyses have suggested the subject attrition was due to random processes. Because the attrition was random, it can be assumed that observed program effects could not be attributed to attrition artifacts. Furthermore, since the attrition rate was consistent across the two conditions (participation vs. control groups and target vs. nontarget conditions), including only those cases with one year follow-up data would not seriously bias the results of the study. The number of subjects included in this research consisted of the 83 students who participated in the one year follow-up interview.

Table 17

Pre-Program Mean Scores for Cases With One Year Follow-up

Interview Data and Cases Missing One Year Follow-up Data*

Research Group	N	Pre-Program Interview Scales			Pre-Program School Records		
		School Attitude	Esteem	Delinq	Grade Point Average	Absences	Test Scores
Target-Program							
Have Data	17	.05	-.02	.56	1.15	46	694
Missing	22	.06	.03	.42	1.31	38	711
Target-Control							
Have Data	12	-.09	-.10	.40	1.27	40	722
Missing	10	-.14	.15	.68	.85	56	728
Nontarget-Program							
Have Data	24	.24	.05	.19	1.70	22	711
Missing	13	.22	.23	.21	1.54	22	730
Nontarget-Control							
Have Data	30	.12	-.02	.24	1.55	29	711
Missing	17	.00	.15	.32	1.72	33	701

*None of the within research group means were statistically significant at $p. < .05$.

Table 18

Pre-Program Mean Scores for Cases With One Year Follow-up

Interview Data By Sample Condition

Sample Condition	N	Pre-Program Interview Scales			Pre-Program School Records		
		School Attitude	Esteem	Delinq	Grade Point	Absences	Test Scores
Target Condition*							
Participation	17	.05	-.02	.56	1.15	46	694
Control	12	-.09	-.10	.40	1.27	40	722
Nontarget Condition*							
Participation	24	.24	.05	.19	1.70	22	711
Control	30	.12	-.02	.24	1.55	29	711

*None of the within sample condition means were statistically significant at $p. < .05$.

Treatment of Other Missing Data

There was still some missing data among the 83 students in the newly formed sample. For example, some of these students were not interviewed immediately following program completion and/or some of the students were missing one piece of the school records data at one of the data collection points (Table 19). The percentages of missing data for each variable ranged from two percent (post-program grade point averages) to eleven percent (one year follow-up standardized test scores). The percentages of missing data for the remaining school records variables fell between five percent and nine percent.

There are several methods for the treatment of small amounts of missing panel data. Four common approaches are: (1) to eliminate cases with incomplete data records, (2) substitution of missing values with the variable mean, (3) replacement of missing values with an estimate obtained from simple regression, and (4) replacement of missing values with an estimate derived from iterated multiple regression (Raymond and Roberts, 1987).

While there has been considerable debate in the literature regarding the utility of each of these methods, there is a general consensus that the multiple regression missing data procedure will produce similar estimates when five percent of the values are missing from any single variable (Kromrey and Hines, 1994; Raymond and Roberts, 1987). Moreover, these advantages remain when using multiple regression estimates when the percentage of missing values exceeds fifteen to twenty percent. Raymond and Roberts (1987) argued that multiple regression estimates are likely to be more accurate as the level of statistical significance and/or multicollinearity increase.

Table 19

Summary of School Records Missing Data from Study Sample*

	Data Collection Point		
Measure	Pre-Prog.	Post-Prog.	Follow-up
Grade Point Aver.	8 (10%)	2 (2%)	5 (6%)
School Absences	7 (8%)	2 (2%)	6 (7%)
Stand. Test Scores	4 (5%)	6 (7%)	10 (12%)

*Percentages represent percent missing from study sample (N=83).

Further, situations which there are high levels of multicollinearity and many variables favor the use of multiple regression estimates for missing data (Beale and Little, 1975).

The multiple regression estimation method consists of three steps. First, observed variables are selected that can be used to predict the values of the variables that are missing data. Second, estimates of the population mean and the covariance are approximated from the sample mean and covariance matrix based on the complete cases. Third, these estimates are used to calculate the linear regressions of the missing variables on the present variables, case by case (Little and Rubin, 1987).

Filling in Missing Values

Using these steps outlined by Little and Rubin (1987), missing data estimates were computed for the school records data (grade point averages, number of school absences, and standardized tests scores) at all three data collection points.

Grade point averages. The first estimation of the missing values was for grade point averages at the pre-program data collection point. The discovery of predictors consisted of correlating the pre-program grade point average with the interview items and the other school records data for completed cases. Of these, the variables having the highest correlation were pre-program number of school absences (-.47), pre-program and post-program standardized test scores (.38 and .27), and the post-program and one year follow-up grade point averages (.24 and .23). These variables were used as the independent variables in the development of a regression equation for pre-program grade point averages. The regression weights were:

PreGPA = -3.0717 + .0001(PostCAT) + -.0118(PreAttend) + .1143(PostGPA) + .1114(YrGPA) + .0056(PreCAT).[23]

For those cases without missing data, a t-test was performed to test the differences in the means between the predicted pre-program grade point average and the actual pre-program grade average. The mean of the predicted pre-program grade point averages was 1.53 and the mean of the actual pre-program averages was 1.47. There were no statistical significant differences between these means (t=-.69, df=54).

The same procedure was performed for missing values for post-program grade point averages. The independent variables in this regression equation and their correlations with post-program grade point average were post-program number of school absences (-.52), post-program school attitude (.44), one year follow-up delinquency (-.39), one year follow-up grade point average (.37), and post-program delinquency (-.36). The prediction equation was:

PostGPA = 1.3231 + .6686(PostSchattitude) + -.0085(PostAttend) + .2995(YrGPA) + -.3852(YrDel) + .1778(PostDel)[24].

---

[23]The constant equals -3.0717, PostCAT is the post-program standardized test score, PreAttend is the pre-program number of school absences, PostGPA is the post-program grade point average, YrGPA is the one year follow-up grade point average, and PreCAT is the pre-program standardized test scores.

[24]The constant equals 1.3231, PostSchAttitude represents the post-program attitudes toward school interview scale, PostAttend is the post-program number of school absences, YrGPA is the one year follow-up grade point average, YrDel is the one year follow-up self-reported delinquency interview scale, PostDel is the post-program self-reported delinquency interview scale.

The mean of the predicted post-program grade point averages was 1.52 and the mean of the actual post-program grade point averages was 1.54. These means were not statistically significantly different (t=.31, df=54).

The same procedure was performed for missing values for one year follow-up grade point averages. The independent variables in this regression equation and their correlations with one year follow-up grade point average were one year follow-up number of school absences (-.43), post-program standardized test scores (.39), one year follow-up delinquency (-.38), post-program grade point averages (.37), and one year follow-up standardized test scores (.38). The prediction regression equation was:

YrGPA = -5.5504 + -.2050(YrDel) + -.0017(YrCAT) + -.0053(YrAttend) + .2837(PostGPA) + .0109(PostCAT)[25].

The mean of the predicted one year follow-up grade point averages was 1.34 and the mean of the actual one year follow-up grade point averages was 1.35. These means were not statistically significantly different (t=.09, df=54).

School absences. The same method was employed in the estimation of missing school attendance data. First, the pre-program number of school absences was most highly correlated with pre-program grade point average (-.48), post-program number of school absences (.42), one year follow-up number of school absences (.34), pre-program self-reported delinquency (.26), and one year follow-up self-reported delinquency (.25). The resulting multiple regression equation was:

---

[25]The constant equals -5.5504, YrDel represents the one year follow-up self-reported delinquency scale, YrCAT is the one year follow-up standardized test score, YrAttend is the One year follow-up number of school absences, PostGPA is the post-program grade point average, and PostCAT is the post-program standardized tests scores.

PreAttend = 40.5841 + 3.2478(YrDel) + -15.1564(PreGPA) + .3937(PostAttend) + -2.5330(PreDel) + .0803(YrAttend)[26].

The mean of the predicted pre-program attendance was 30 and the mean of the actual pre-program number of absences was 29. These means were not statistically significantly different (t= -.43, df=54).

For the post-program number of school absences, the correlates were post-program grade point average (-.53), one year follow-up number of school absences (.68), pre-program number of school absences (.42), pre-program self-reported delinquency (.33), and post-program self-reported delinquency (.28). The regression equation for this estimation of missing data was:

PostAttend = 15.0742 + .1587(PreAttend) + -6.9422 (PostGPA) + 5.7826(PostDel) + .4523(YrAttend) + -3.1987(PreDel)[27].

The mean for the predicted post-program number of school absences was 23, and the mean actual post-program school absences was also 23. These were not statistically significantly different (t=.24, df=54).

In constructing a prediction model for the one year follow-up number of school absences, the correlates were post-program number of school absences (.68),

---

[26]The constant equals 40.5841. YrDel represents the one year follow-up self-reported delinquency scale. PreGPA is the pre-program grade point average. PostAttend is the post-program number of school absences. PreDel is the pre-program self-reported delinquency scale. And, YrAttend is the one year follow-up number of school absences.

[27]The constant equals 15.0742. PreAttend represents the pre-program number of school absences. PostGPA is the post-program grade point average. PostDel is the post-program self-reported delinquency scale. YrAttend is the one Year follow-up number of school absences. and PreDel is the pre-program self-reported delinquency scale.

the one year follow-up grade point average (-.43), one year follow-up self-reported delinquency (.37), pre-program number of school absences (.34), and pre-program self-reported delinquency (.32). The regression equation for one year follow-up number of school absences was:

YrAttend = 20.8477 + .3763(YrDel) + .0927(PreAttend) + -9.3812(YrGPA) + .8694(PostAttend) + 3.0645(PreDel)[28].

The predicted mean for the one year follow-up number of school absences was .32 and the actual mean was 29. These were not statistically significant different (t=-1.56, df=54).

Standardized test scores. Finally, this method was employed in order to estimate missing data for the standardized academic tests at each of the data collection points. For the pre-program standardized tests, the correlates were post-program standardized tests (.56), the one year follow-up standardized tests (.40), the pre-program grade point average (.38), one year follow-up self-reported delinquency (-.28), and pre-program self-esteem (.20). These variables produced the following regression equation:

PreCAT = 158.5046 + -22.5065(YrDel) + .0076(YrCAT) + 12.8980(PreGPA) + 1.5682(PreEsteem) + .7318(PostCAT)[29].

---

[28]The constant equals 20.8477. YrDel represents the one year follow-up self-reported delinquency scale. PreAttend represents the pre-program number of school absences. YrGPA is the one year follow-up grade point average. PostAttend is the post-program number of school absences. And, PreDel is the pre-program self-reported delinquency scale.

[29]The constant equals 158.5046. YrDel represents the one year follow-up self-reported delinquency scale. YRCAT is the one year follow-up standardized test score. PreGPA is the pre-program grade point average. Esteem1 is the pre-program self-esteem scale. And, PostCAT is the post-program standardized test score.

The means for the predicted and actual pre-program standardized test scores were 707 for the predicted and 708 for the actual. There were no statistically significant differences between these means (t=.01, df=54).

The post-program standardized test score regression was comprised of the one year follow-up standardized test scores (r=.68), the pre-program standardized test scores (r=.56), one year follow-up self-reported delinquency (r=-.37), one year follow-up grade point average (r=.39), and post-program grade point average (r=27). These produced the following equation:

PostCAT = 126.1267 + -8.111(YrDel) + .6281(YrCAT) + -3.4760(PostGPA) + .1269(PreCAT) + 6.0423(YrGPA)[30].

These means between the predicted scores and the actual scores were the same (727). Therefore, there were not statistically significant differences between the predicted and the actual post-program standardized test scores (t=.18, df=54).

For the one year follow-up standardized test scores, the correlates were post-program standardized test scores (.68), pre-program standardized test scores (.40), pre-program self-esteem (.38), one year follow-up grade point average (.38), and post-program self-esteem (.21). The regression equation was:

---

[30]The constant equals 126.1267. YrDel represents the one year follow-up self-reported delinquency scale. YRCAT is the one year follow-up standardized test score. PostGPA is the post-program grade point average. PreCAT is the pre-program standardized test score. And, YrGPA is the one year follow-up grade point average.

YrCAT = 344.1824 + 6.6741(PreEsteem) + 1.7534(YrGPA) + .0109(PreCAT) + .3881(PostEsteem) + .5384(PostCAT)[31].

The mean of the predicted one year follow-up standardized test scores was 746 and mean of the actual standardized test scores was 743. These means were not statistically different (t=1.56, df=54).

Description of the Current Sample

Using the prediction equations previously described, the predicted values for the missing data were entered into the data set. Table 20 presents the demographic characteristics across the four research groups. The percentages are fairly similar across the research groups for the gender, age, and school grade categories. The one difference is that the students in the target condition were slightly older than the nontarget students. However, the age difference was present prior to the reduction of the study sample.

Overview of the Study

Given the relatively untested questions surrounding the effectiveness of alternative schools serving specific target populations, there is a need for more comprehensive research in this area. This study was designed to address issues in each of the following general areas: (1) differences between students in the target and nontarget conditions; (2) testing and further development of Gold and Mann's (1982)

---

[31]The constant equals 344.1824. PreEsteem represents the pre-program self-esteem scale. YrDel is the one year follow-up self-reported delinquency scale. PreCAT is the pre-program standardized test score. PostEsteem is the post-program self-esteem scale. PostCAT is the post-program standardized test score.

Table 20

Study Sample Characteristics*

Characteristic	Research Group			
	Target Program	Target Control	Nontarget Program	Nontarget Control
Gender				
Males	13 (76%)	9 (75%)	15 (63%)	19 (63%)
Females	4 (24%)	3 (25%)	9 (27%)	11 (37%)
Total	17 (100%)	12 (100%)	24 (100%)	30 (100%)
Age				
11 Years Old	0	0	0	2 (7%)
12	4 (24%)	5 (42%)	9 (38%)	9 (30%)
13	8 (47%)	1 (8%)	12 (50%)	12 (40%)
14	4 (24%)	4 (33%)	3 (12%)	6 (20%)
15	1 (5%)	2 (17%)	0	1 (3%)
Total	17 (100%)	12 (100%)	24 (100%)	30 (100%)
Mean Age	13.53	13.75	13.15	13.42
Grade in School				
6th	2 (12%)	0	0	2 (7%)
7th	14 (82%)	11 (92%)	24 (100%)	26 (86%)
8th	1 (6%)	1 (8%)	0	2 (7%)
Total	17 (100%)	12 (100%)	24 (100%)	30 (100%)

*Percentage are column percents for the specific categories.

alternative education Social Psychological Model; and, (3) exploring pre-program variables which may predict which students were more likely to be successful in this program.

Assessment of Intergroup Differences

The pre-program and post-program differences were tested using those variables commonly found in other studies of alternative education programs. These variables were delinquency, attitudes toward school, school performance, and self-esteem. This study tested for statistically significant differences between the four groups prior to the beginning of the program, immediately following completion of the program, and one year following completion of the program.

The testing of differences across sample subgroups was developed from other studies that looked at other possible correlates of delinquency (Moffitt and Henry, 1989; Loeber and Schmaling, 1985; Dishion et al., 1984). In each of these studies, the sample was divided into subgroups based upon official records (Dishion et al., 1984), psychological testing (Moffitt and Henry, 1989), and self-reported delinquency (Loeber and Schmaling, 1985).

Similar the previous research, this study tested for group differences using multivariate analysis of variance tests (MANOVA). This project was interested in group differences across time, therefore, a repeated measures analysis of variance test was employed. One major advantage of repeated measures MANOVA over separate analysis of variance tests at each data collection point is that the repeated measures allows for a smaller sample size (Norusis, 1992).

Testing the Social Psychological Model

The second component of the analyses in this study tested Gold and Mann's (1982) alternative education model of social psychological process of change. This component consisted two different steps. The first was to assess the reliability of the constructs in the model and the relationships between the constructs. Correlational analysis and reliability tests were used for this procedure. The purpose of this step was to determine if the constructs employed by Gold and Mann (1982) represented reliable and unique constructs.[32]

The second step of this set of analyses consisted of testing Gold and Mann's theoretical model employing path analysis. The purpose of this model was to assess the direct and indirect relationships between attendance at the alternative school, academic performance, and various school attitudes with self-reported delinquency. Further, utilization of the Social Psychological Model allows for the exploration of differences in processes for students in the target population and outside the target population. This part of the analyses will be similar to Gold and Mann's (1982) study, in that, it will test for process differences across subgroups of students.

Discovering Predictors of Success

The final component of the analyses explored the utility of pre-program variables that may predict who was successful in the alternative school. Analogous to research in other areas, this part of the study was important to policy implications for the future development of target populations for these types of programs.

---

[32]Unique refers to a construct not be highly correlated with the other constructs in the theoretical model. Part of the assessment determined whether any of the original constructs could be combined.

Program success was defined using two separate outcomes. The first outcome was school performance. Since this was an education-based program that was theorized to have an indirect effect on delinquency through school performance, it was possible that predictors of academic success may have been different than predictors of success in reducing delinquency. The second outcome included in these analyses was delinquency. The reduction of delinquency was the primary goal of this program. These analyses attempted to predict success at the one year follow-up assessment.

For this component, the one year follow-up self-reported delinquency scale scores were regressed on the pre-program items of school attitudes, self-esteem, grade point average, attendance, standardized academic test scores, gender, age, school grade, attendance at the alternative school, and target or nontarget condition assignment.

Summary

Table 21 provides a summary of the components involved in this study. The analyses began with the construction of the four research groups and tested for mean pre-program and post-program differences between the four research groups. The next component consists of testing Gold and Mann's (1982) Social Psychological Model and employ the theoretical constructs of this model to assess the indirect and direct effects in the alternative school process. The final component of this study will explore potential predictors of program academic and delinquency success.

Table 21

Summary of Study Components

Study Component	Issues to be Addressed	Steps in the Research
1	Research Groups	1) Create four research groups 2) Test for group differences at pre- and both post-program assessments
2	Social Psychological Model	1) Test constructs in the model 2) Assess theoretical relationships between constructs 3) Test for group process differences at both post-program assessments
3	Predictors of Success	1) Explore possible predictors at both post-program assessments

Research Goals

The overall goal of this research was to test the alternative education model for differences between students within the target population and for students outside of the target definition. Specifically, the study was designed to address the following issues.

Research Groups

1. Did attending the alternative school have different direct effects for students in the target population and students not in the target population?

Social Psychological Model

1. Were the constructs the same when retested using the data from this study?

2. Did the theoretical relationships between the constructs remain when statistically tested?

3. Did the alternative education program have different indirect and direct effects on students in the target and nontarget groups.

Predicting Program Success

1. Did any of the pre-program variables predict which students would be academically successful in this program?

2. Did any of the pre-program variables predict which students would decrease their delinquency?

Predicted Results

Research groups. Certain patterns of outcome results are predicted for students in the four research groups. The program outcomes immediately following the program and one year following completion of the program for students in the target population who attended to alternative school will have improved. These

outcomes are academic achievement, school attitudes, self-esteem, and delinquent behaviors.

The pattern will be slightly different for students in the nontarget population who attended the alternative school. These students may improve in academic achievement and school attitude while they are at the alternative school. However, there will be no change in delinquent behaviors. Any positive changes occurring immediately following completion of the program are likely to disappear when the students return to their regular school (which will be observed at the one year follow-up).

Finally, similar patterns will occur for students in both control groups. The outcomes of these students will remain the same or slightly decrease for the post-program and one year follow-up assessments. That is, these students will not change or may have worse attitudes toward school, self-esteem, academic performance, and higher rates of delinquency.

Prior research has suggested that the alternative school will have more positive effects on the students in the target condition. First, findings from the meta-analysis implied that since this program was developed for at risk students, the program will likely have a larger direct effect on this group of students. Second, the implications of the meta-analysis were consistent with Lipsey's (1990) conclusions that interventions for youth with high risk factors (e.g., delinquency) were associated with higher effect sizes.

The Social Psychological Model. The Social Psychological Model will further explain the findings from the repeated measures MANOVA analyses. That is, the

alternative school will have an indirect effect for students in the target-program group. Delinquent behaviors for students in this group will be lower than the target-control group as a function of being more committed to the student role, having increased academic performance, having a more positive attitude toward school, and being less involved in school disruptive behaviors.

Students attending the alternative school who are not in the target condition may have increased positive school attitudes and a greater commitment to the student role, but any changes will be small and will likely be unrelated to a decrease in delinquent behaviors.

The Social Psychological Model predicts that there will be negative changes in the process variables (academic prospects, commitment to the student role, attitude toward school) for students in both control groups. The negative processes will lead to an increase in school disruption and delinquency.

Predictors of program success. The alternative school is expected to produce different percentages of individual changes across the four research groups. For instance, since this program was developed for at risk students, it is expected that students in the target-program group will have the greatest frequency of individual changes while the target-control group will have the lowest number of positive changes. In addition, the students in the nontarget-program group will have a slightly higher percentage of individual changes than the nontarget-control. However, these differences should not be a substantial as the differences within the target sample condition.

Due to the lack of discussion in the alternative school literature pertaining to what individual characteristics may be associated with program success, it is difficult to make apriori hypotheses regarding possible predictors of program success. In testing Gold and Mann's (1984) conclusions, one would expect students with higher levels of self-esteem prior to program entry to be more successful in the program. These students would also be more likely to continue to be successful once they have returned to the regular school system.

RESULTS

The analyses for this study were conducted to answer the research questions that were presented earlier. Specifically, the research questions consisted of testing for direct and indirect effects of the alternative education program across the target and nontarget sample conditions and exploring pre-program variables that may predict future program success.

Analysis of Mean Scores Across Time

In this section, the results of testing for mean score differences will be presented. This presentation will include repeated measures analyses of variance (MANOVA) that were used to test for significant differences between the groups within target and nontarget sample conditions on the interview scales (self-reported delinquency, attitudes toward school, and self-esteem) and the school records (grade point average, school attendance, and standardized academic tests).

The repeated analyses of variance tested for six types of direct effects. These were for program group differences (participation vs. control group), sample condition differences (target vs. nontarget condition), time differences (differences at the separate times of the data collection for all four of the research groups), the interaction of program group by time (program group differences that occurred across

time), the interaction of program group by sample condition (program group differences between the target and nontarget condition), the interaction of the sample condition by time (target and nontarget condition differences that occurred across time), and the interaction of program group by sample condition by time (program group differences that occurred within the target and nontarget sample conditions across time). Since the participation and control groups were equal within the target and nontarget conditions, the effect of the interaction of program group by sample condition by time was of primary interest. This would signify that program group differences did occur following completion of the program and/or one year following completion of the program within the target and/or the nontarget sample conditions. For each of the analyses, a table will be presented which will display the mean scores of the four research groups across the time periods. Variables showing statistically significant differences between the mean scores will be plotted.

Analyses of Variance for Interview Scales

Self-reported delinquency. Table 22 presents the mean scores for self-reported delinquency by the four research groups. At each time period, students in the target sample condition reported higher levels of delinquency. This was expected given the nature of the at risk definition for the target condition. The across target condition mean scores were slightly different at each time period. This difference, however, did not appear to be significant.

A 2 X 2 X 3 repeated measures MANOVA was conducted for the overall self-reported delinquency scale. The results of this analysis indicate that there were no statistically significant differences for the interactions of Program Group by Time

Table 22

Self-Reported Delinquency Scale Means

	Data Collection Point		
Research Group	Pre-Program	Post-Program	One Year Follow-up
Target-Program	.79	.71	.79
Target-Control	.64	.76	.87
Nontarget-Program	.24	.31	.42
Nontarget-Control	.30	.31	.33

Analysis of Variance Design

	SS	DF	MS	F	Sign. of F
Within Cells	11.34	158	0.07		
Time	0.47	2	0.23	3.25	0.041
Program Group X Time	0.05	2	0.02	0.35	0.708
Target Sample X Time	0.01	2	0.01	0.08	0.925
Program Group X Target Sample X Time	0.33	2	0.17	2.33	0.101

($F(2,158) = .05$, $p. > .05$), Sample Condition by Time ($F(2,158) = .01$, $p. > .05$), or Program Group by Sample Condition by Time ($F,2,158) = .33$, $p. > .05$). Time was statistically significant ($F(2,158) = 3.25$, $p. < .05$, meaning the the overall means were different at the different data collection points.

Attitudes toward school. The mean scores of the attitude toward school scale are presented in Table 23. There appeared to be differences in school attitude across the target and nontarget conditions at each of the three data collection points. Within the nontarget condition, the school attitudes of the participation program group appeared to be higher than the control group. The MANOVA analysis for attitudes toward school did not find any significant differences among the interactions.

Self-esteem. Table 24 present the mean scale scores for self-esteem. In the participation group for both the target and nontarget conditions, the scale scores increased following program completion (at the post-program assessment) and decreased at the one year follow-up interview (Figure 5). The mean scores for the control group had an opposite pattern. Self-esteem for this group decreased slightly at the post-program assessment and increased at the one year follow-up. These patterns were found to be statistically significant in the MANOVA analysis for self-esteem. In other words, the Program Group X Time interaction was the only significant finding ($F(2,158) = 3.65$, $p. < .05$).

Analyses of Variance for School Records

Grade point averages. The grade point averages displayed a different pattern than the interview scales (Table 25). A plot of the mean scores across time by the four research groups has shown that the program groups in the nontarget condition

Table 23

Attitudes Toward School Scale Means

Research Group	Data Collection Point		
	Pre-Program	Post-Program	One Year Follow-up
Target-Program	-.06	-.04	-.07
Target-Control	-.18	.18	-.10
Nontarget-Program	.10	.25	.06
Nontarget-Control	.03	-.11	-.01

Analysis of Variance Design

	SS	DF	MS	F	Sign. of F
Within Cells	18.34	156	0.12		
Time	0.01	2	0.00	0.02	0.976
Program Group X Time	0.36	2	0.18	1.51	0.224
Target Sample X Time	0.07	2	0.04	0.31	0.735
Program Group X Target Sample X Time	0.20	2	0.10	0.86	0.423

Table 24

Self-Esteem Scale Means

	Data Collection Point		
Research Group	Pre-Program	Post-Program	One Year Follow-up
Target-Program	3.71	3.97	3.73
Target-Control	3.63	3.60	3.79
Nontarget-Program	3.81	4.16	4.05
Nontarget-Control	3.76	3.67	3.87

Analysis of Variance Design

	SS	DF	MS	F	Sign. of F
Within Cells	34.49	158	0.22		
Time	0.99	2	0.50	2.27	0.106
Program Group X Time	1.59	2	0.80	3.65	0.028
Target Sample X Time	0.11	2	0.06	0.26	0.774
Program Group X Target Sample X Time	0.11	2	0.05	0.25	0.780

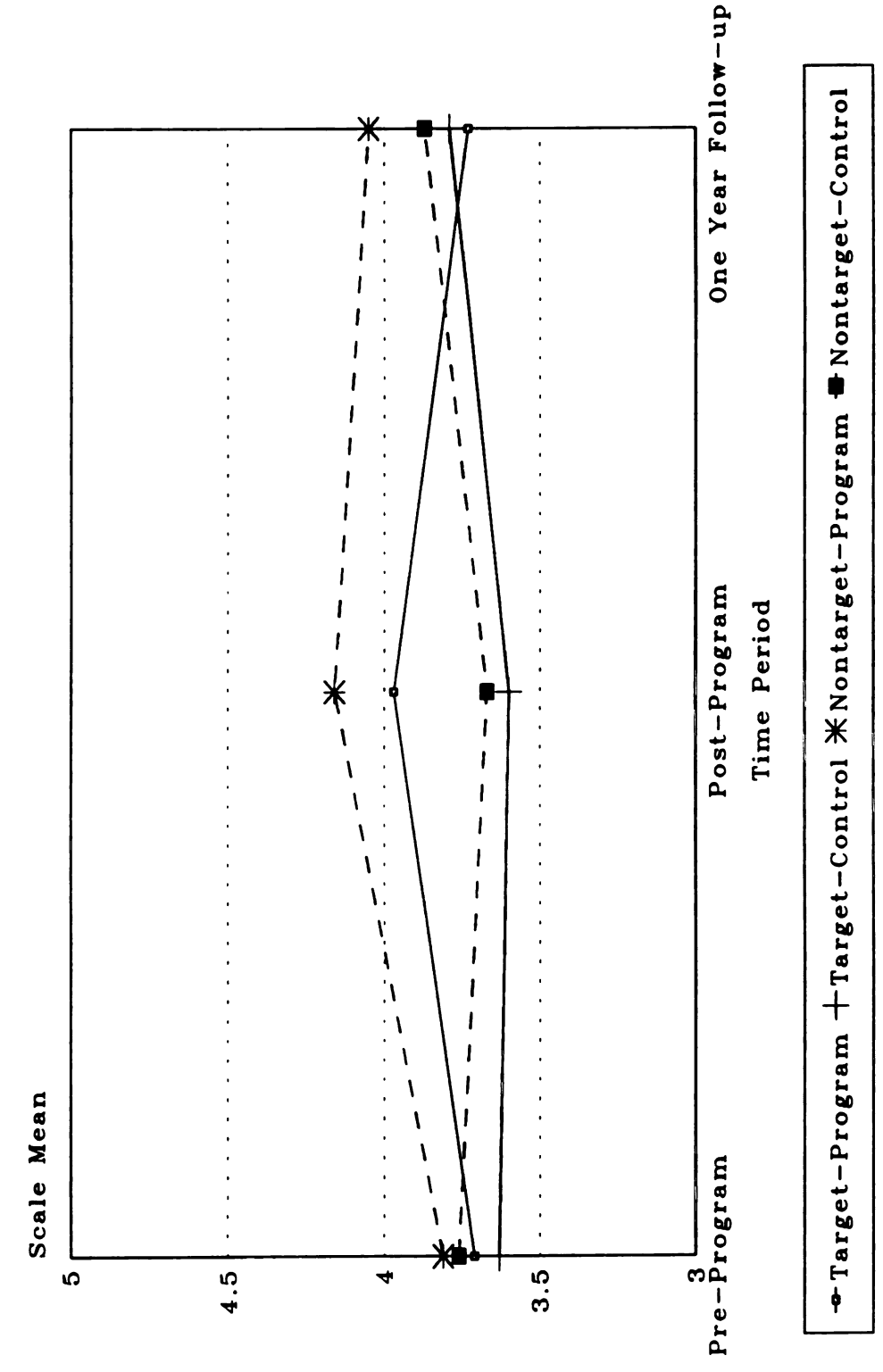


Figure 5: Plot of Self-Esteem Scale Means

Table 25

Means of Grade Point Averages

	Data Collection Point		
Research Group	Pre-Program	Post-Program	One Year Follow-up
Target-Program	0.97	1.46	0.87
Target-Control	1.27	0.77	1.42
Nontarget-Program	1.68	2.17	1.58
Nontarget-Control	1.54	1.11	1.30

Analysis of Variance Design

	SS	DF	MS	F	Sign. of F
Within Cells	56.16	158	0.36		
Time	0.28	2	0.14	0.39	0.676
Program Group X Time	11.78	2	5.89	16.57	0.000
Target Sample X Time	0.59	2	0.30	0.84	0.436
Program Group X Target Sample X Time	0.54	2	0.27	0.75	0.472

had a higher grade point average at each of the three data collection points (Figure 6). Similar to delinquency, this was expected since school performance was one of the criteria used to assign students to the target and nontarget conditions. Similar to self-esteem, the grade point averages of the program participation group increased at the post-program assessment and decreased at the one year follow-up assessment while the grade point averages of the program control group decreased at the post-program assessment and increased at the one year follow-up assessment. The MANOVA analysis found that these differences were statistically significant. The statistical differences were found in the Program Group X Time interaction ($F(2,158) = 16.57$, $p. < .05$).

Standardized academic test scores. The mean standardized academic test scores are presented in Table 26. These scores were consistent across program groups and target and nontarget conditions. All of the mean scores increased at both of the two post-program assessments. The only statistically significant difference was across the data collection times ($F(2,158) = 43.07$, $p. < .05$).

Number of absences from school. Table 27 presents the mean number of school absences across the four research groups. Again, the nontarget conditions had a lower number of school days missed at all three data collection points. This was expected since school attendance was also one of the criteria used to assign students to the target and nontarget conditions. The patterns of the mean scores were similar to self-esteem and attendance. For the program participation groups, the number of absences decreased while the students were in the alternative education program and increased when they returned to the traditional school (Figure 7). The program

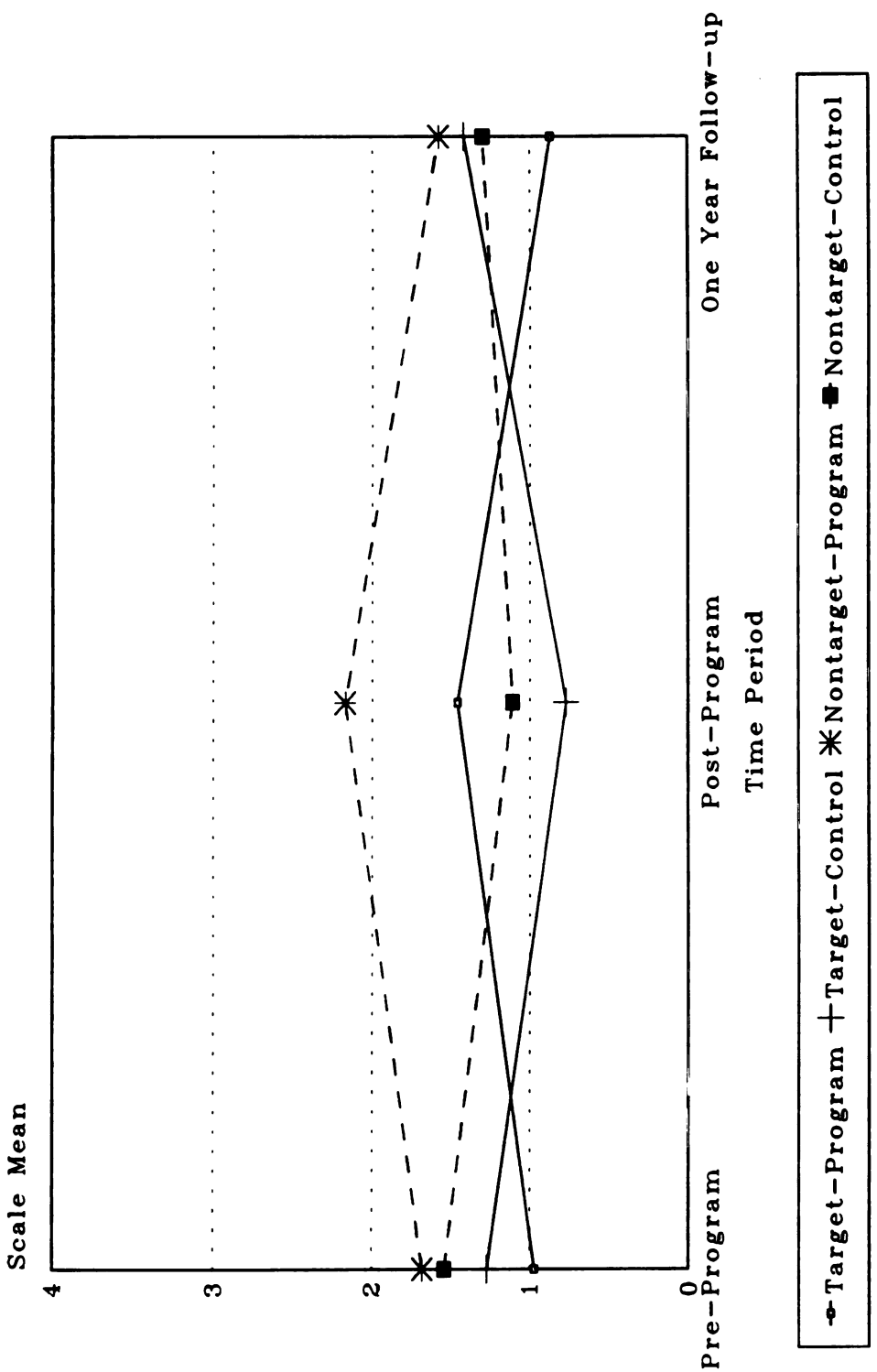


Figure 6: Plot of Grade Point Average Means

Table 26

Means of Standardized Academic Test Scores

	Data Collection Point		
Research Group	Pre-Program	Post-Program	One Year Follow-up
Target-Program	693	717	738
Target-Control	722	734	744
Nontarget-Program	711	724	744
Nontarget-Control	711	724	740

Analysis of Variance Design

	SS	DF	MS	F	Sign. of F
Within Cells	69679.67	158	441.01		
Time	37990.93	2	18995.47	43.07	0.000
Program Group X Time	1633.52	2	816.76	1.85	0.160
Target Sample X Time	197.39	2	98.70	0.22	0.800
Program Group X Target Sample X Time	879.99	2	440.00	1.00	0.371

Table 27

Means of School Absences for the Prior School Term

	Data Collection Point		
Research Group	Pre-Program	Post-Program	One Year Follow-up
Target-Program	45	26	44
Target-Control	40	39	34
Nontarget-Program	22	16	27
Nontarget-Control	28	25	27

Analysis of Variance Design

	SS	DF	MS	F	Sign. of F
Within Cells	41989.83	158	265.76		
Time	2417.47	2	1208.74	4.55	0.012
Program Group X Time	2648.90	2	1324.45	4.98	0.008
Target Sample X Time	382.19	2	191.10	0.72	0.489
Program Group X Target Sample X Time	711.71	2	355.86	1.34	0.265

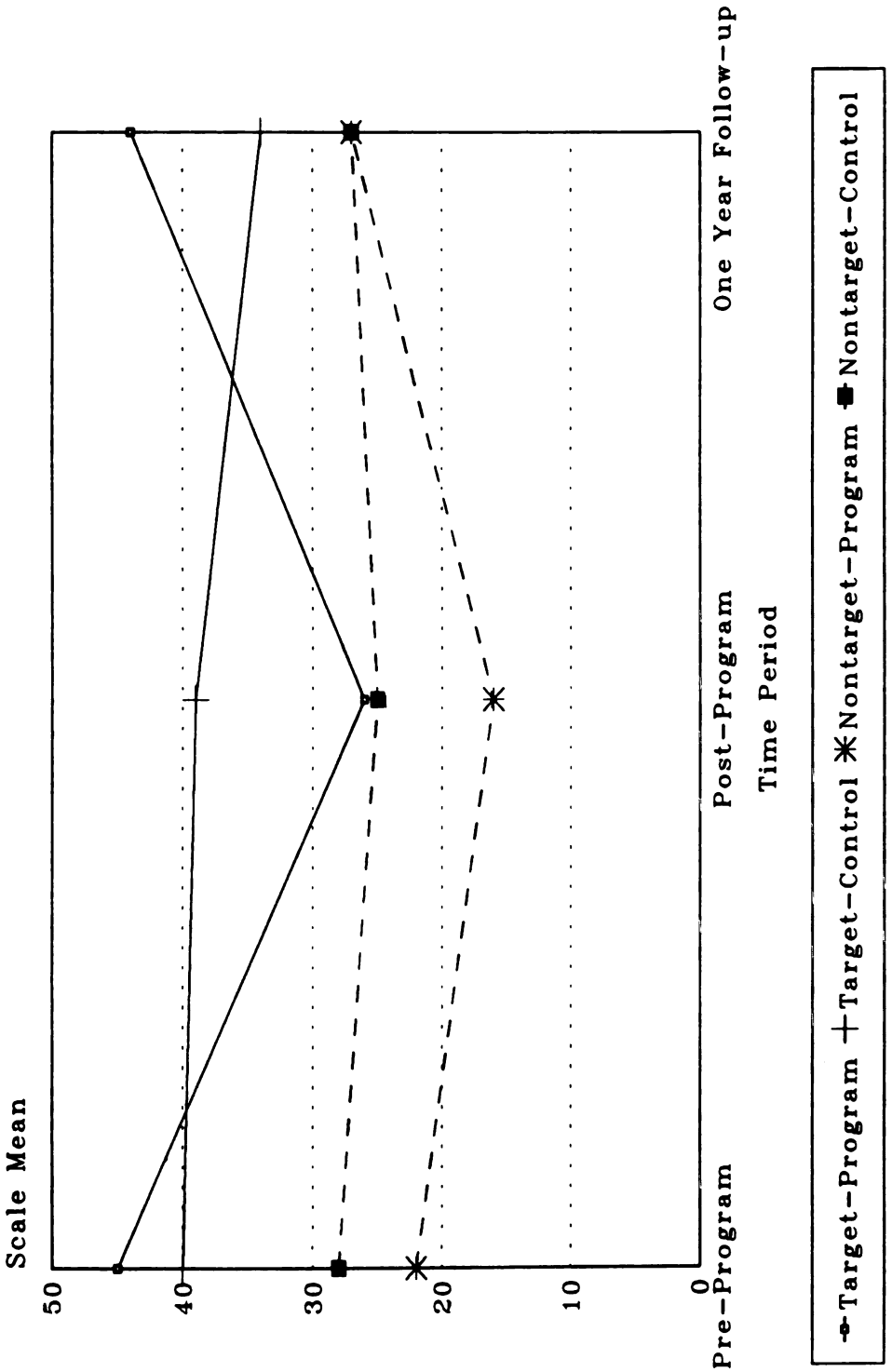


Figure 7: Plot of School Absences

control groups displayed a different pattern of school attendance. The mean number of absences for these groups remained relatively the same at each of the data collection points.

The MANOVA analysis found that there were statistically significant differences across time periods ($F(2,158) = 4.55$, $p. < .05$) and for the interaction of Program Group X Time ($F(2,158) = 4.98$, $p. < .05$).

Summary. The repeated measures MANOVA produced two distinct findings. First, the alternative school did not have any direct effects on self-reported delinquency, attitudes toward school, or standardized test scores for the target or nontarget conditions. Second, direct effects of attending the alternative school were found for self-esteem, grade point averages, and school attendance. The patterns were the same for all three variables. The alternative school students had higher self-esteem, better grade point averages, and improved school attendance while they were at the alternative school. However, these positive effects dissipated when the students returned to the traditional school. The findings were consistent for both the target and nontarget populations.

Testing the Social-Psychological Model

The second section of the data analyses consisted of testing Gold and Mann's theoretical social-psychological model of the alternative education process. The purposes of testing this model were to assess the utility of this model in understanding the change process of alternative education programs and to determine if the program had any direct and/or indirect effects on delinquency.

Figure 3 presented the amended theoretical model.[33] The alternative school was believed to decrease delinquent activity through four mediating processes. These were: (1) the positive environment of the program would help the students believe that they could succeed in school; (2) program participants would become more committed to the student role (i.e., put forth more effort in doing school work, feel less stigmatized than in the regular school, receive better grades, and be more satisfied with their performance in school); (3) students would become more attached to the alternative school staff and like going to the program; and, (4) students at the alternative school would become less disruptive at school, the more they like going to the program.

Definition of the Constructs in the Model

Attending the alternative school. To represent the students in the sample conditions who went to the alternative school, two separate variables were created using effect coding. For each variable, students who went to the alternative school were coded as "1" and students who did not attend the program were coded as "-1". The remaining students were assigned a code of "0." For example, one variable represented students who met the target definition. The target condition variable was coded in the following way: students meeting the target definition who attended the alternative school were coded as "1," students in the nontarget condition were coded

---

[33]The difference between this model and Gold and Mann's original model was the omission of the mediating process of "Awareness of the Greater Flexibility of the School's Program." This mediator was not included in the present model because program staff from the alternative school did not feel this was an important aspect of the program.

as "0" and, students in the target condition who did not attend the alternative school program were coded as "-1."

Brighter academic prospects. Academic prospects represented the students' beliefs in their chances of being successful students and their feelings of being stigmatized by school staff for performing poorly in school. This construct used interview data from the post-program assessment. The specific items were from Part One. These were (the numbers in the parentheses are the item number from the interview instrument):

(7) You just can't win in school;
(8) I can't be successful in school;
(9) I don't have much chance of getting passing grades in school;
(12) I get the feeling that the school thinks I'm no good.

This scale was tested for reliability using coefficient alpha. The alpha for academic prospects was .70.

Commitment to the student role. The construct of commitment to the student role consisted of the students' assessing how well they were currently performing in the role of student. This included their most recent course grades, their reports of the effort they were devoting to schoolwork, and their satisfaction with their performance. The creation of this construct involved standardizing the post-program grade point averages and the relative items from the post-program interview. The items drawn from the Part Two of the interview were:

(1) How close do you come to doing the best work you are able to do in school;
(2) How hard do you think you work in school compared to the other students in your grade;
(3) How satisfied are you with the way you're actually doing in school;

(7) How much schooling would like to get eventually;
(8) How much schooling do you actually expect to get;
(9) How important is getting good grades to you personally;
(10) How do feel about the following statement: "I try hard in school."

The alpha coefficient of reliability for this scale was .76.

Attitude toward school. The attitude toward school construct represented the students' global attitude toward school along with their attachment toward teachers. These items were taken from Part One and Part Two from interview. The specific items were:

Part One
(1) Teachers "put down" students;
(2) Teachers go out of their way to help students;
(3) I can talk to teachers about things that matter to me;
(4) Teachers do not trust students;
(5) Teachers are more like friends than authorities;

Part Two
(5) How much do you like school;
(6) How interested are you in most of your subjects at school.

The alpha coefficient for this seven item construct was .66.

School disruption. The school disruption scale used the same items that were described in the previous chapter (see Figure 4). Similar to the other interview items, this post-program interview was used to create this scale.

Delinquent behaviors. The outcome construct of self-reported delinquent behaviors was constructed using the same items described earlier (see Figure 4). These items were taken from the one year follow-up interview.

Replication of the Model

The social-psychological model was tested utilizing a path analysis procedure. Figure 8 presents the causal paths which were tested in this procedure. This model shows the direct effects and indirect effects in the temporal order which they were tested. For instance, the group selection process was performed prior to the beginning of the program. The school attitude constructs (academic prospects, commitment to the students role, and attitude toward school) and school disruption were measured immediately following completion of the program. The self-reported delinquent behaviors was measured at the one year follow-up.

Figure 9 presents the results of the empirical path analysis. The paths included in this model represent statistically significant path coefficients from all of the possible relationships tested from Figure 8 (see Appendix C for the full model).

Direct effects. As predicted by Gold and Mann (1982), the alternative school had direct effects on the two theoretical school-related constructs. The program was able to brighten students' academic prospects (B=.32) and facilitate a greater commitment to the student role (B=.23). Further, an increase in the commitment to the student role had a direct effect on students' attitudes toward school (B=.51). This, in turn, led to a decrease in school disruption (B=-.54). Finally, a decrease in school disruption led to a decrease in later delinquent behaviors in the community (B=.42).

There were two theoretical paths which did not have statistically significant path coefficients. Participation in the alternative school did not have a direct effect on school attitudes, however, the strong direct effect of commitment to the student role

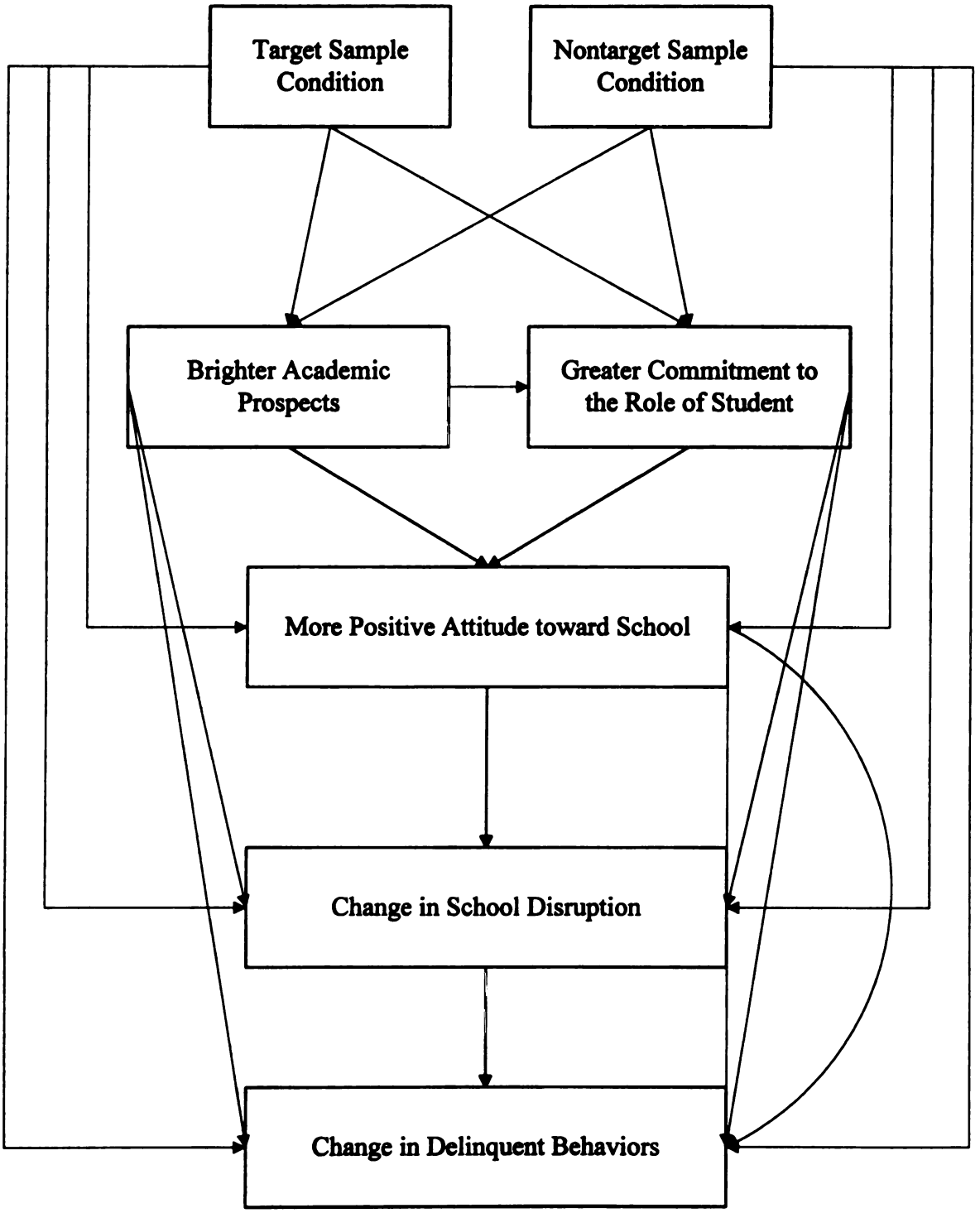
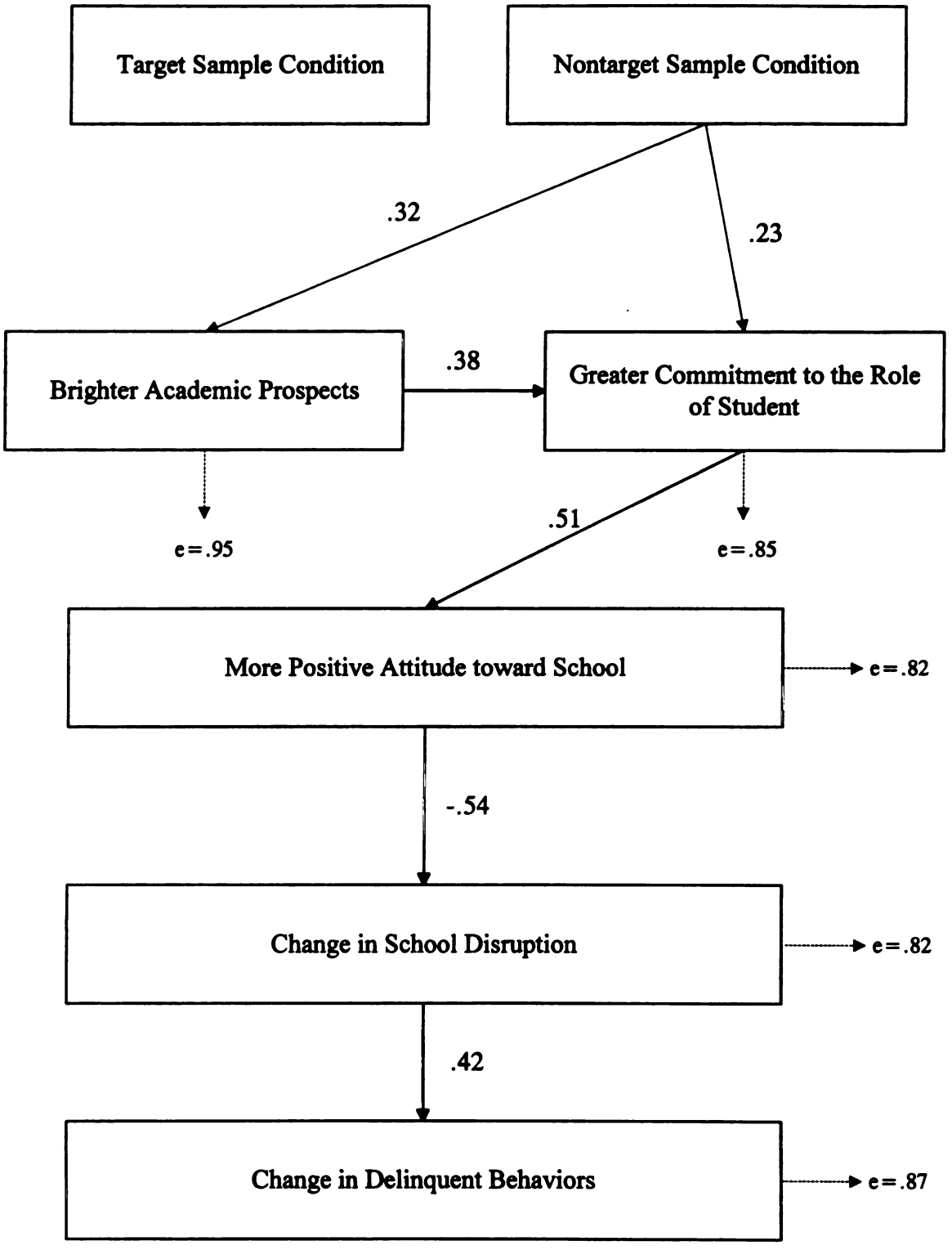


Figure 8: Tested Paths of the Model of Change



*Only statistically significant paths are presented.

Figure 9: Empirical Path Model of Change*

may have mediated the direct effect of going to the alternative school. The other nonsignificant path coefficient was an increase in the perception of academic prospects did not have a direct effect on school attitude. Again, commitment to the student role appeared to be a moderator of this relationship.

One important finding was that the alternative school was able to produce direct effects only for students in the nontarget condition. There were no statistically significant path coefficients for students in target condition. This finding suggests that the alternative education program may been more beneficial for students in the nontarget condition.

Indirect effects. One of the advantages of path analysis is that it allows for the decomposition of correlations among variables in the path model. From the decomposition of correlations, it is possible to determine the indirect effects that one variable may have on another through a third variable (Pedhazur, 1982). For instance, the social-psychological model posited that the alternative education program would indirectly decrease delinquency by improving academic prospects, which would increase commitment to the student role, leading to a more positive attitude toward school, which would decrease school disruptive behaviors, leading to a decrease in delinquency.

The indirect effects of attending the alternative school on delinquency were calculated by following a three step process described by Bohrnstedt and Knoke (1988).[34] This process generally consisted of retracing statistically significant paths

---

[34]For a more detailed explanation of the calculation of indirect effects, see Pedhazur (1982:588-593).

from delinquency to attendance in the alternative school, multiplying the values of path coefficients for these compound paths, and summing them together to obtain the indirect effect of one variable on another through a third mediating variable.

In calculating the indirect effects of the alternative school, attending the alternative education program had two causal paths to delinquency. First, attending the alternative school indirectly decreased delinquency through brighter academic prospects (B=.32), more commitment to the student role (B=.38), improved attitudes toward school (B=.51), decreased school disruption (-.54), and a decrease in school disruption would lead to a decrease in delinquency (B=.42). Therefore, the calculation of this compound path was:

$$.32 * .38 * .51 * -.54 * .42 = -.01$$

Second, attending the alternative school indirectly decreased delinquency through more commitment to the student role (B=.38), improved attitudes toward school (B=.51), decreased school disruption (-.54), and a decrease in school disruption would lead to a decrease in delinquency (B=.42). Therefore, the calculation of this compound path was:

$$.38 * .51 * -.54 * .42 = -.04$$

The indirect effect was obtained by adding the compound paths together:

$$-.01 + -.04 = -.05$$

The indirect effect attending the alternative school had on delinquency was -.05. Even though this effect was relatively small, it has shown that the alternative school was able to have some effect on delinquency.

Similar to the direct effects of the alternative school, the indirect effects were limited to the students in the nontarget condition. The alternative education program did not have any indirect effects on any of the variables in the model for students in the target condition.

Summary

The assessment of the constructs and the theoretical relationships between the constructs in the theoretical model were further substantiated by these analyses. That is, all of the constructs in the model were fairly reliable and the theoretical causal relationships among the constructs were similar to the statistically significant path coefficients.

The path modeling of the social-psychological model of the alternative school process developed by Gold and Mann (1982) found that the alternative school program did not have any effects, direct or indirect, on students in the target condition. This finding was similar to the MANOVA analyses which also did not find any direct effects of the alternative school program on students in the target condition. Moreover, the results of the path analysis did find that the alternative school was able to indirectly decrease delinquency for students in the nontarget condition.

Exploration of Predictors of Program Success

The final aspect of the data analysis consisted of looking at which students were successful in decreasing delinquent behaviors and/or had increased grade point averages from the pre-program assessment to the one year follow-up assessment. The

first part of this section in the analysis involved determining which students could be considered "successful" and assessing how many students were successful across the program groups and the target conditions. The second part of this section explored pre-program variables which may predict which students would be more successful than others.

For these analyses, change variables were created for self-reported delinquency and grade point average. The computation of the change variables consisted of subtracting the pre-program data from the one year follow-up data. A negative change score for self-reported delinquency would be interpreted as saying that there was a decrease in delinquency at the one year follow-up assessment. On the other hand, a positive change score for grade point average would signify that the student had a higher grade point average at the one year follow-up assessment than the pre-program assessment.

The change scores were coded two different ways for these analyses. The change scores were dichotomized for the first part of this section to reveal which students had positive changes and which students did not have positive changes.[35] For the multiple regression prediction models, it was necessary to retain the continuous change scores in order to maintain a linear relationship between the independent variables and the dependent variable.

---

[35]Students who had a change score of zero were counted as not having a positive change.

Determination of Changes

Table 28 presents the cross-tabulation of how many students had positive and negative changes in self-reported delinquency by how many students had positive and negative changes in grade point average. Overall, 42 (51%) of the students did not change or had negative changes in self-reported delinquency and grade point average, while 14 (17%) of the students had positive changes in both self-reported delinquency and grade point average. Further, 14 (17%) other students had positive changes in self-reported delinquency and negative changes in grade point average and the remaining 13 (15%) of the students in the sample had positive increases in grade point average with negative changes in self-reported delinquency. Using the phi statistic to test for significant differences across the cells, the differences between changes in self-reported delinquency and grade point average were statistically significant (phi=.27, p. < .05).

One interesting aspect of this table was that almost one-half of the sample (49%) had some type of positive change from the pre-program assessment to the one year follow-up period. It was expected that those students who had positive changes in one of the two variables would likely have changes in the other variable. However, as Table 28 has shown, this was not the case with only 31% of those students who had positive changes (14 out of 41) having changed positively in self-reported delinquency and grade point average.

Self-reported delinquency. There were 27 (33%) students in the sample who decreased their self-reported delinquency from the pre-program assessment to the one year follow-up (Table 29). A slightly higher proportion of the students in the

Table 28

Self-Reported Delinquency Changes by

Changes in Grade Point Averages

Changes in Delinquency[a]	Changes in Grade Point Averages*		
	Positive Changes	Negative or No Changes	Row Totals
Positive	13 (15%)	14 (17%)	27 (33%)
Negative or None	14 (17%)	42 (51%)	56 (67%)
Column Totals	27 (33%)	56 (67%)	83 (100%)

*All percentages are total percents.

[a]Phi statistic=.27, p. < .05

Table 29

Self-Reported Delinquency Changes by Program Group and Sample Condition

	Changes in Self-Reported Delinquency*		
	Positive Changes	Negative or No Changes	Row Totals
Participation Group[a]	15 (37%)	26 (63%)	41 (100%)
Control Group	12 (29%)	30 (71%)	42 (100%)
Column Totals	27 (33%)	56 (67%)	83 (100%)
Target Condition[b]	8 (28%)	21 (72%)	29 (100%)
Nontarget Condition	19 (35%)	35 (65%)	54 (100%)
Column Totals	27 (33%)	56 (67%)	83 (100%)

*All percentages are row percents.
[a]Phi statistic=.09, p. > .05
[b]Phi statistic=.08, p. > .05

program participation group had positive changes than the program control group (37% for the participation group and 29% for the control group). These differences were not statistically significant (phi=.09, p. > .05). For the target conditions, 28% (8) of the students in the target condition decreased their self-reported delinquency while 35% (19) of the students in the nontarget condition had positive changes. Again, these differences were not statistically significant (phi=.08, p. > .05).

Table 30 compares the changes in self-reported delinquency across the four research groups. The target condition students who attended the alternative school had a higher percentage of positive changes then any of the four groups (41% for the target-program group, 37% for the nontarget-control group, 33% for the nontarget-program group, and 8% for the target-control group). The phi statistic was .36 which was statistically significant at p. < .05.

Grade point average. The percentages of students who improved their grade point average from the pre-program assessment to the one year follow-up were similar to the percentages of students who reported decreases in self-reported delinquency, however, none of these differences were statistically significant. For instance, 15 (37%) of the students in the program participation group had improved grade point averages while 13 (31%) of the students in the program control group had better grades (Table 31). This was also true for changes in grade point averages across the two target conditions. Ten (34%) of the students in the target condition had improved grades compared to 18 (33%) of the students in the nontarget condition.

When controlling for the target and nontarget conditions, a higher percentage of students who attended the alternative school and were in the target condition had

Table 30

Self-Reported Delinquency Changes by Program Group

by Sample Conditions

	Changes in Self-Reported Delinquency*		
	Positive Changes	Negative or No Changes	Row Totals
Target Condition[a]			
Participation Group	7 (41%)	10 (59%)	17 (100%)
Control Group	1 (8%)	11 (92%)	12 (100%)
Column Totals	8 (28%)	21 (72%)	29 (100%)
Nontarget Condition[b]			
Participation Group	8 (33%)	16 (67%)	24 (100%)
Control Group	11 (37%)	19 (63%)	30 (100%)
Column Totals	19 (35%)	35 (65%)	54 (100%)

*All percentages are row percents.
[a]Phi statistic=.36, p. < .05
[b]Phi statistic=.03, p. > .05

Table 31

Changes in Grade Point Averages by Program Group and Sample Condition

	Changes in Grade Point Averages*		
	Positive Changes	Negative or No Changes	Row Totals
Participation Group[a]	15 (37%)	26 (63%)	41 (100%)
Control Group	13 (31%)	29 (69%)	42 (100%)
Column Totals	28 (34%)	55 (66%)	83 (100%)
Target Condition[b]	10 (34%)	19 (66%)	29 (100%)
Nontarget Condition	18 (33%)	36 (67%)	54 (100%)
Column Totals	28 (34%)	55 (66%)	83 (100%)

*All percentages are row percents.
[a]Phi statistic=.05, p. > .05
[b]Phi statistic=.01, p. > .05

improved grade point averages (41% in the target-program group, 33% in the nontarget-program group, 33% in the nontarget-control group, and 25% in the target control group)(Table 32).

Summary. Overall, 27 (33%) of the students had positive changes in self-reported delinquency and 28 (34%) had positive changes in grade point averages from the pre-program assessment to the one year follow-up. While the percentages of students who improved were similar across the program groups and target conditions, a higher percentage of target-program students had improved in both delinquency and school grades.

Prediction of Change from the Entire Sample

The exploration of variables which may have explained which students were successful at the one year follow-up consisted of regressing the continuous change scores of self-reported delinquency and grade point average on several pre-program variables.

The pre-program variables were demographic variables (gender, age, grade in school), school performance variables (grade point average, standardized test score), interview scales (attitude toward school, self-reported delinquency), and the program group. Some of the pre-program variables were not included in the regression equation in order to decrease the possibility of having multicollinearity between independent variables. For instance, number of school absences and self-esteem were omitted from these analyses. School absences was highly correlated with grade point average (-.52) and self-esteem was highly correlated with attitude toward school (.51). The remaining independent variables had intercorrelations below .50 (Table 33).

Table 32

Changes in Grade Point Averages by Program Group

by Sample Conditions

	Changes in Grade Point Averages*		
	Positive Changes	Negative or No Changes	Row Totals
Target Condition[a]			
Participation Group	7 (41%)	10 (59%)	17 (100%)
Control Group	3 (25%)	9 (75%)	12 (100%)
Column Totals	10 (34%)	19 (66%)	29 (100%)
Nontarget Condition[b]			
Participation Group	8 (33%)	16 (67%)	24 (100%)
Control Group	10 (33%)	20 (67%)	30 (100%)
Column Totals	18 (33%)	36 (67%)	54 (100%)

*All percentages are row percents.
[a]Phi statistic=.17, p. > .05
[b]Phi statistic=.00, p. > .05

Table 33

Correlations of Pre-Program and Demographic Variables

	GPA	Sch Abs	Tests	Del	Self	Gen	Grade	Age	Group	Sample
GPA	1.0									
Sch Abs	-.52*	1.0								
Tests	.38*	-.31*	1.0							
Del	-.37*	.16	-.23*	1.0						
Self	.22*	-.02	.25*	-.16	1.0					
Gen	.08	.27*	.07	-.09	.05	1.0				
Grade	-.06	.03	.37*	.06	-.09	.08	1.0			
Age	-.15	.29*	-.18	.08	-.04	.04	.00	1.0		
Group	-.05	.00	-.14	.09	.07	-.02	-.08	-.11	1.0	
Sample	.33*	-.35*	.08	-.51*	.06	.13	.00	-.17	-.14	1.0
Attitude	.21	-.03	.14	-.44*	.50*	.03	-.09	-.07	.07	.18

* p. < .05

GPA = Grade Point Average
Tests = Standardized Academic Achievement Tests
Self = Self-Esteem
Grade = Grade in School
Group = Program Group (1=control group, 2=participation group)
Sample = Sample Condition (1=target condition, 2=nontarget condition)
Attitude = Attitude toward School

Sch Abs = School Absences
Del = Self-Reported Delinquency
Gen = Gender (1=boys, 2=girls)
Age = Years Old

Self-reported delinquency.[36] Table 34 presents the multiple regression analysis. The only significant slope was self-reported delinquency (B=-.34). The significance of this slope indicated that of all of the students in the sample, those students who reported higher amounts of self-reported delinquency at the one year follow-up. In other words, the most delinquent students reported the most decreases in self-reported delinquency.

Grade point average.[37] The results of the multiple regression analysis for changes in grade point averages is presented in Table 35. Two of the pre-program variables had statistically significant slopes. These were pre-program grade point average (B=-.90) and self-reported delinquency (B=-.54). Students with lower pre-program grade point averages had the most positive improvement in their grade point averages at the one year follow-up. Furthermore, students who were less delinquent had more positive increases in grade point averages than students who reported higher levels delinquency at the pre-program assessment. These findings suggest that students in the nontarget conditions were likely to have the more positive changes in grade point average than the target conditions (it is important to recall that students in the nontarget conditions performed poorly academically but were not seriously delinquent).

---

[36]The change score for self-reported delinquency was created by subtracting the pre-program assessment score from the one year follow-up score. Hence, a positive change score represents increases in delinquency from before the program started to one year following completion of the program.

[37]The change scores for grade point average was computed by subtracting the pre-program assessment grade point average from the one year follow-up grade point average. Thus, positive change scores represent higher grade point averages at the one year follow-up than the pre-program assessment.

Table 34

Multiple Regression Estimates to Predict Changes

in Delinquency for the Entire Sample

Variables	B	S.E.	Beta	Sign.
Pre-School Attitude	.0450	.1021	.0515	.6609
Pre-Self Report Delin.	-.3424	.1116	-.3779	.0030
Pre-Grade Point Aver.	.0407	.0631	.0782	.5210
Age	.0478	.0464	.1106	.3065
Pre-Stand. Acad. Tests	-.0014	.0013	-.1464	.2558
Gender*	-.1680	.0864	-.2040	.0556
Grade in School	.1049	.1449	.0844	.4714
Program Group**	.0365	.0825	.0472	.6597
Constant	.0355	1.2807		.9780

*Gender was coded "1" for boys and "2" for girls.

**Program Group was coded "1" for the control group and "2" for the participation group.

Multiple R =	.45
R^2 =	.20
Standard Error =	.36
F Value =	2.35
Significance of F	.03

Table 35

Multiple Regression Estimates to Predict Changes

in Grade Point Averages for the Entire Sample

Variables	B	S.E.	Beta	Sign.
Pre-School Attitude	.2206	.1961	.1068	.2643
Pre-Self Report Delin.	-.5374	.2144	-.2507	.0144
Pre-Grade Point Aver.	-.8964	.1213	-.7278	.0000
Age	.0135	.0891	.0132	.8801
Pre-Stand. Acad. Tests	.0000	.0025	-.0108	.9172
Gender*	.2052	.1660	.1053	.2203
Grade in School	-.2910	.2784	-.0990	.2994
Program Group**	-.0217	.1586	-.0118	.8920
Constant	3.2020	2.4608		.1972

*Gender was coded "1" for boys and "2" for girls.

**Program Group was coded "1" for the control group and "2" for the participation group.

Multiple R =	.69
R^2 =	.47
Standard Error =	.70
F Value =	8.34
Significance of F	.00

Prediction of Change from the Program Participation Group

The same type of multiple regression analyses were conducted with only those students who attended the alternative education program. These analyses were performed to assess potential characteristics of the students who attended the alternative school which may have been related to the prediction of future success. The same pre-program variables were used as predictors that were used in the earlier regression analyses.

Self-reported delinquency. Similar to the analysis of the delinquency change scores for the entire sample, students at the alternative school who had higher levels of pre-program self-reported delinquency had a higher amount of decreases at the one year follow-up (Table 36). The slope of this variable was -.48.

Grade point average. Table 37 presents the results of the multiple regression analysis for changes in grade point averages. There were four variables with statistically significant slopes. These were pre-program grade point average (B=-1.12), self-reported delinquency (B=-.64), gender (B=.75), and age (B=-.41). The regression slopes for pre-program grade point average and self-reported delinquency were in the same direction as in the prior regression analysis with the complete sample. However, the two significant demographic variables suggested that females had more positive changes in grade point averages than boys and that younger students had more positive changes in grade point averages than the older students.

Summary

Almost one-half of the students in the sample had positive changes from the pre-program assessment to the one year follow-up in delinquency and/or grade point

Table 36

Multiple Regression Estimates to Predict Changes in Delinquency for Participation Group Students

Variables	B	S.E.	Beta	Sign.
Pre-School Attitude	.1342	.1713	.1193	.4388
Pre-Self Report Delin.	-.4770	.1631	-.4890	.0062
Pre-Grade Point Aver.	.1398	.1107	.2225	.2155
Age	.0794	.1047	.1291	.4537
Pre-Stand. Acad. Tests	-.0034	.0020	-.3560	.0919
Gender*	-.2857	.1628	-.2870	.0885
Grade in School	.4359	.3299	.2535	.1954
Constant	-1.1804	2.6785		.6623

*Gender was coded "1" for boys and "2" for girls.

Multiple R =	.60
R^2 =	.36
Standard Error =	.41
F Value =	2.66
Significance of F	.03

Table 37

Multiple Regression Estimates to Predict Changes in Grade Point Averages for Participation Group Students

Variables	B	S.E.	Beta	Sign.
Pre-School Attitude	.1943	.3045	.0809	.5278
Pre-Self Report Delin.	-.6430	.2900	-.3088	.0336
Pre-Grade Point Aver.	-1.1151	.1968	-.8315	.0000
Age	-.4135	.1862	-.3148	.0333
Pre-Stand. Acad. Tests	-.0032	.0035	-.1551	.3702
Gender*	.7522	.2894	.3539	.0139
Grade in School	-.5904	.5864	-.1608	.3213
Constant	12.6229	4.7616		.0122

*Gender was coded "1" for boys and "2" for girls.

Multiple R =	.75
R^2 =	.56
Standard Error =	.73
F Value =	5.92
Significance of F	.00

average. Of the students who had positive changes, the students who attended the alternative school had a slightly higher within group percentage. When looking at the students who had positive changes out of the students who attended the alternative school, the target condition had a higher proportion of students who had positive changes than the nontarget condition.

The multiple regression analyses, regressed changes in delinquency and grade point average on several pre-program variables, found that students who had higher levels of delinquency at the pre-program assessment had a greater amount of decrease in delinquent behaviors at the one year follow-up. Also, students with lower levels of delinquency and higher grade point averages at the pre-program assessment had more positive changes in grade point average at the one year follow-up.

DISCUSSION AND CONCLUSIONS

Earlier in this report, several questions were presented that were to be addressed by this study. These questions were related to three general areas consisting of program effects across time and sample conditions. The first area tested for direct effects regarding attitudes toward school, self-esteem, self-reported delinquency, school grades, standardized academic test scores, and school attendance. The second general area associated with this research was the relevance of Gold and Mann's (1982) Social Psychological Change Model for the alternative education process and the direct and indirect effects of the alternative school shown by this model. The final area of interest was the determination of which students were more successful in the alternative school and what pre-program variables predicted future program success. In this section, the conclusions that can be drawn from the results of the current study as they relate to the research questions will be discussed. Also, recommendations for future alternative schools and research will be made.

Direct Effects Across the Research Groups

The research question addressing direct program effects asked, "did attending the alternative school have different direct effects for students in the target population and students not in the target population?" Based on the results from the MANOVA

analysis, students attending the alternative education program had a more positive attitude toward school, better school grades, and higher attendance levels immediately following completion of the program than the students in the sample that did not go to the alternative school. However, the alternative school did not have any differential effects on students in the target and nontarget sample conditions. That is, the alternative school did not have an effect on the students meeting the target population criteria or those students who did not meet the target population criteria.

The MANOVA analysis also showed that the positive changes in school attitudes, school grades, and school attendance at the post-program assessment for the participation group disappeared at the one year follow-up. That is, when the students returned to the regular school after attending the alternative school, their school attitudes and performance decreased. Again, these negative changes in the participation group were similar across the target and nontarget sample conditions.

These types of findings were similar to those of Frazier and Baenen (1988), Driscoll, Mandell, and Schneider (1985), Reilly et al. (1982), and Reisler and Friedman (1978). Each of these studies found that positive changes occurring at the alternative school were reversed when the students returned to the regular school.

Reisler and Friedman (1978) speculated that while at the alternative school, students were able to effectively change their environment to their liking, which improved their school performance. However, due to the large size of the regular school, the former alternative school students were unable to cope with the rigidness of the school structure and were frustrated by their inability to change their environment, as they were able to do at the alternative school.

Reilly et al. (1982) offered an additional reason why this phenomenon may have occurred. They believed that the problem may lie with the regular school. Students who are sent to alternative schools are those who have problems which are serious enough that the student needs to be placed outside the regular school. The students experience success in the more individualized and supportive environment of the alternative school, and are sent back to the regular school. The regular school has not been prepared or modified to help the alternative school students adjust to their return to the regular school.

Reilly et al. (1982) suggested that one of two possible solutions be considered. First, the regular school should develop some type of program to help the alternative school students when they return to the regular school. Second, they questioned whether alternative school students should even return to their regular school. If the students in the alternative school are not going to be as successful in the regular school, it would not be wise to return them to their regular school.

Critique. Both Reisler and Friedman (1978) and Reilly et al. (1982) were promoting alternative education programs in their studies, hence, their speculations regarding the failure of alternative schools to produce lasting effects may have been slightly biased. Rather than looking at why the students were unsuccessful when they returned to the regular school, it may be beneficial to examine why students are successful at the alternative school.

The environment of the typical alternative school is more relaxed, caring, supportive, and friendlier than the regular school. The lower student-to-teacher ratio allows the teachers to spend more time with the students on a one-to-one basis.

Therefore, it is likely that the students will become more attached to the teachers, since the teachers at the alternative school will be able to provide more positive attention than teachers in the larger regular school.

The grading scale at the alternative school is different than at the regular school. First, the students are given grades for their individual progress rather than how well they perform compared to the rest of the students in the class (progress-based grades). With this type of grading, a student can still receive a good grade for completing an assignment, even if it was completed a week later than other students' assignments. Second, for those assignments that do require assigning performance-based grades (e.g., achievement tests), the alternative school teachers have only the alternative education students to establish a baseline grading scale (Duke and Muzio, 1978). For example, on a bell-shaped grade distribution, the students who receive high grades at the alternative school may receive average or below average grades at the regular school.

In addition, the attendance rate for alternative school students improves because the students like attending the program and are performing better. For the alternative education program in this study, alternative school staff picked the students up in front of their houses every morning. In some cases, staff would knock on the front door of a student's house if the student was not waiting for the transportation. Alternative school students had a much more difficult time skipping school while they were in the program than when they attended the regular school.

Recommendation. In contrast to Reilly et al. (1982), it is the alternative education program that should be modified to help the students adjust to returning to

the regular school. The possibility exists that alternative schools are setting their students up for failure when they return to the regular school. It does not appear that alternative school students are fully prepared to return to the mainstream school system. For instance, the students in the alternative school in the present study attended the program full-time for one school semester. When the semester was complete, they were sent straight back to the regular school. As in the Reisler and Friedman (1978) study, these students probably experienced some degree of "culture shock" from going to a relaxed school environment of the alternative school to the other extreme of the regular school.

The onus of facilitating alternative school students' adjustment when they return to the regular school should be on both the alternative school and the regular school. There are two different suggestions for handling this problem. First, the alternative school students could attend the alternative education program full-time for one school semester and part-time for the following school semester. This would provide the alternative school students with a slower adjustment period. The part-time alternative school curriculum could consist of tutoring the students' in their regular school classes and providing counseling for those students having problems adjusting to the regular school.

Second, since the first recommendation would significantly increase the costs of operating the alternative school, a second suggestion may be more feasible. The alternative school could provide a counselor/tutor for the regular school to help the former alternative school students. This individual would work with the counselors and teachers at the regular school to identify academic and behavioral problems the

alternative school students may be having as a result of returning to the regular school.

The Utility of the Social Psychological Model

Two of the three research questions revolved around the usefulness of the Social Psychological Model of the alternative school process developed by Gold and Mann (1982). The first question pertained to the uniqueness and reliability of the individual constructs in the model. The second question dealt with the theoretical relationships of the constructs. That is, would Gold and Mann's model fit the data from the alternative school in this study?

The model fit the data relatively well for both the constructs in the model and the model itself. The model constructs were operationalized using the same interview and school records items that were originally employed by Gold and Mann. The coefficient alpha for the scale reliabilities were all over .70.

Furthermore, the theoretical relationships of the constructs also were similar to the original model when empirically tested. There were only two causal paths that were statistically significant in Gold and Mann's (1982) model that were not statistically significant in the present study. Also, the size and direction of the path coefficients were similar between the two data sets for this model.

The third research question concerning the Social Psychological Model inquired about direct or indirect effects that the alternative school had on self-reported delinquency for the target and nontarget sample conditions. Based on a path analysis of the model, the alternative school was able to indirectly affect delinquency for only

the nontarget sample condition. Similar to the findings of the MANOVA, the alternative school had no direct effects on delinquency for either sample condition.

Although this finding was discouraging, it was not surprising. Arnove and Strout (1980) suggested that alternative schools for youth with serious behavioral problems were "too little, too late." That is, the causal roots of seriously delinquent youth usually extend well beyond school failure and alternative schools are not able to have an effect on problems outside of school success.

These findings appeared to conflict to the conclusions of the meta-analysis that alternative schools which focused on a target population had higher effect sizes than alternative schools that were not structured for a specific group of students. However, programs in the meta-analysis that were defined as the target population programs were for students with behavioral problems and/or academic problems. The findings of the present study have furthered the findings of the meta-analysis by suggesting that alternative schools may be more effective if they deal with students who are failing school but are not involved in serious delinquent behaviors.

Predicting Program Success

The final aspect of the data analysis identified which students in the sample had improvements in self-reported delinquency and academic achievement at the one year follow-up assessment and explored the possibility of predicting who would be successful in this program. The first part of these analyses consisted of counting the number of students who showed improvements and who did not. The second part

involved regressing continuous change scores for self-reported delinquency and academic achievement on several pre-program variables.

Individual Changes in Behavior and School Performance

Self-reported delinquency. Overall, 32% of the students in the study reported a decrease in delinquent behaviors at the one year follow-up. Three of the four research groups were fairly similar in the percentage of students reporting decreases. The outlying group was the target-control group. These were students who met the criteria for the target population but were randomly placed in the control group. Only one of the twelve students in this group reported positive changes in delinquency.

While most of the students in the target-control group were more delinquent at the one year follow-up than at the pre-program assessment, seven of the seventeen students in the target-program group reported being less delinquent at the one year follow-up than they were at the pre-program assessment. A similar proportion of the students in the nontarget research groups reported a decrease in their delinquency over the same time periods (33% for the nontarget-program group and 37% for the nontarget-control group).

This finding suggests that the alternative school was able to have direct effects on delinquency for individual students in the target sample condition. Even though the alternative school did not have widespread effects on all of the students in the target condition, a higher percentage of students reported positive changes for this research group than any of the other three.

One explanation for this finding can be that the students in the target sample condition regressed to the mean, committing less delinquent acts at the one year

follow-up than the pre-program assessment. However, the finding that a lower proportion of the students in the target-control group decreased their delinquent behaviors discredits this explanation. If regression to the mean had occurred, the proportion of students in the target-control group reporting decreases in delinquency would be similar to the proportion of students in the target-program group.

This findings appeared to be different from the findings of the MANOVA analysis and of the Social Psychological Model. One explanation for the differences in findings across analyses is that it is possible that there were students who had negative changes in self-reported delinquency, the negative changes may have washed out the positive changes so that the group means appeared to have remained the same. This finding supports the conclusion of the meta-analysis that alternative schools have more effects on students whom the programs are designed to benefit.

Academic achievement. The percentages of students whose grade point averages improved were more even than for self-reported delinquency. However, the target-program group had the highest percentage of students with better grades across the four research groups. This pattern was similar to the individual changes in delinquency. The target-program group had the highest percentage of students who had positive changes and the target-control group had the lowest percentage of students with positive changes.

Given that this was an education-based program with all of the students being low academic achievers, it was expected that a higher number of students attending the program would have improved grades, regardless of the sample condition. However, similar to the findings of the individual changes in self-reported

delinquency, the target-program group had a higher percentage of students improving their grade point averages than the nontarget-program group. This finding suggests that the target students benefited more from the alternative school experience than the nontarget students who attended the program.

Summary. The analysis of change scores appeared to have led to different conclusions than the findings from the Social Psychological Model. For instance, in the path analysis of the Social Psychological Model, the alternative school had some positive indirect effects for students in the nontarget-program group and no effects on the target-program group students. Whereas, the analysis of individual changes has shown that a lower percentage of students in the target-control group had decreased delinquent behaviors and increased grade point averages than any of the other four research groups.

The findings from the individual changes over time also appear to contradict the MANOVA analysis that did not find statistically significant program effects on self-reported delinquency. Since the MANOVA analysis was based upon group means, the combination of positive and negative changes may have made the mean delinquency score for the target-program group to appear the same over time.

Prediction of Program Success

The procedure of predicting program success consisted of regressing a continuous change score for self-reported delinquency and academic achievement on several pre-program variables to determine if there were any pre-program variables which might indicate future program success. The continuous change scores were calculated by subtracting the pre-program assessment score from the one year follow-

up score for the two dependent variables. For self-reported delinquency and school performance, multiple regression models were developed for the entire sample and for only those students participating in the alternative school.

Self-reported delinquency. The only statistically significant predictor of future program success for self-reported delinquency was pre-program delinquency. Those students who reported higher levels of delinquency at the pre-program assessment reported the most decreases in these behaviors at the one year follow-up.

These findings appeared to represent a regression to the mean for students with high amounts of self-reported delinquency at the pre-program assessment. That is, a student who is participating in a lot of delinquent behaviors at one point in time is more likely to decrease his/her behaviors, even if it is a small amount, than a student who has participated in little or no delinquent behaviors.

This conclusion was reinforced by the earlier findings from the MANOVA analysis for self-reported delinquency and the Social Psychological Model for the target sample condition. These analyses found that the program had no significant effects on self-reported delinquency. If these earlier analyses had found effects, than the conclusions of the prediction analysis may have been different.

Academic achievement. There were two statistically significant predictors present in both multiple regression models for changes in academic achievement. These were pre-program grade point average and pre-program self-reported delinquency. For pre-program grade point averages, those students with lower pre-program grades had the most positive changes in grade point average at the one year

follow-up. Also, those students who reported lower levels of delinquency had the most positive changes in grade point average.

The significance and direction of the pre-program grade point averages appeared to represent a regression to the mean, similar to the findings from the self-reported delinquency prediction model. Those students with extremely low grade point averages who remained in school were able to raise their grade point averages more than students who already had higher grade point averages.

The significance and negative direction of pre-program self-reported delinquency suggested that students with low levels of delinquency at the pre-program assessment had more positive changes in their grade point averages. All of the students in the study sample with low amounts of delinquency were in the nontarget sample condition. Since this finding was present in the regression model for the entire sample and for the program participation, these changes cannot be attributed with attending the alternative school. Hence, this finding implies that students with academic problems, absent of behavioral problems, may perform better in academic-oriented programs because these students are most likely to improve academically than students with academic and behavioral problems.

The other statistically significant finding was that girls who attended the alternative school had more improved grades than boys. This findings was presented with caution due to several possible explanations. First, even though the program referral criteria was similar to the boys', the girls may have been less delinquent than the boys. Therefore, as students with only academic problems, the chance of positively affecting their grades was higher than the boys. It was not possible to test

this belief due to the small number of girls in the sample. Second, it was possible that the alternative school did have greater effects on girls than boys. Again, the small sample did not allow for further exploration.

Conclusions

The primary purpose of this study was to assess the viability of an alternative education program as a vehicle for preventing delinquency. Even though the alternative school evaluated in this study was developed for serious delinquents with academic problems, the program participants were both students with behavioral and academic problems and students with only academic problems.

There were three different types of analyses performed on the data in this study. First, the MANOVA analysis tested for main program effects for mean differences between the four research groups and the individual change analysis assessed main effects through individual change scores. Second, the Social Psychological Model also tested for main program effects, but was also able to evaluate indirect effects. While the path analysis found that the program did not have any direct effects on delinquency, the program was able to indirectly affect delinquency through brighter academic prospects, a greater commitment to the student role, more positive school attitudes, and decreases in school disruption. Third, the final part of the analyses looked at individual changes from the pre-program assessment to the one year follow-up tested for self-reported delinquency and grade point average. This analysis found that more students in the target-program had positive changes in delinquency and school performance than the other three groups

while a higher percentage of students in the target-control group had negative changes.

The findings from this study have led to two separate conclusions. Statistically, the alternative school did not have any effects on the students who had behavioral problems. This program was unable to have long term statistical effects on school-related attitudes, self-esteem, academic achievement, or self-reported delinquency. For these students, an academic-oriented program was not able to influence their lives enough to greatly change their behaviors. This does not necessarily reflect upon this alternative education program, a school-related program may simply not be the answer for youth with other types of problems that may contribute to their delinquent behavior (e.g., family, peers, etc.).

The Social Psychological Model demonstrated that the alternative school was able to positively affect students' attitudes toward school, which led to a decrease in delinquency. The theoretical foundations underlying alternative education programs for delinquents were correct, but the lack of statistically significant relationships for the target sample condition suggests these programs should be implemented as delinquency prevention programs for students who are performing poorly in school rather than a delinquency intervention program for students who are serious delinquents.

When looking at individual changes and not statistically significant findings, the study found that the alternative school was able to keep many of the students in the target-program group from becoming more delinquent, suggesting that this program and the target population criteria were successful in preventing serious

delinquency. If this were indeed the case, the onus would be on the alternative school staff and the regular school staff to carefully refer only the students meeting the targeted criteria.

An overall conclusion from the present study is that the alternative education program was able to have small positive effects on the students in both of the sample conditions. This can be interpreted as a positive conclusion for the alternative school. For instance, the alternative school was able to have small indirect effects on students in the nontarget population even though the program was not developed for these students. Further, the alternative school was able to have small positive effects on a number of individual students in the targeted population with the speculation that the program may have been more effective with more students meeting the target population criteria.

The finding of small effects should not be discouraging for proponents of alternative education. It is important to keep in mind that the sample consisted of youth with an array of troubles (e.g., low social-economic status, inner city, broken families, a strong presence of gangs in the neighborhood) and it was an important finding that this program was able to have any effects.

Recommendations for Future Research

One of the major observations from the historical development of alternative schools and the meta-analysis was the lack of empirical studies. There is an extremely large amount of writing on alternative education which promotes the use of alternative schools for a variety of social problems. Unfortunately, only a few of the

journal articles and book chapters which describe these programs include empirical evaluations of predefined outcomes.

The primary recommendation for future research is that there is a grave need for more future research. The present study has suggested that these programs may be more useful for students with academic problems and behavioral problems and that girls may do better than boys. It would be beneficial for future research to follow this study by further evaluating the outcomes of various targeted populations (primarily low academic achievers vs. serious delinquents). Future research should also investigate the differential effectiveness of alternative education programs on other types of subgroups (e.g, boy vs. girls, younger vs. older).

Furthermore, future research should utilize and test Gold and Mann's (1982) Social Psychological Model when evaluating alternative education programs. The use of this model was very important in explaining how alternative schools can have an indirect effect on delinquency. Prior studies that did not find program effects for alternative education programs may have missed indirect effects by not utilizing this model.

This study has also demonstrated the importance of performing different types of analyses in evaluating these types of programs. For instance, the findings from the observation of individual changes implied that the use of mean scores should not be the only analysis employed in drawing conclusions regarding program effectiveness.

The present study has contributed to the alternative education literature by providing empirical evidence that alternative schools can have different effects on students with different types of problems. Also, this study has suggested that it is

important to have a very narrowly defined target population for these programs. Early alternative education programs were created to provide a specific group of students with an opportunity to further their education outside of the mainstream school system. Present-day alternative schools must support this notion in order to be effective and afford students with an opportunity to be successful.

APPENDICES

APPENDIX A

APPENDIX A

Alternative Education Meta-analysis
Data Collection Form

1. Identification Number (3 digits) _____

2. Date of Publication (Year, 1989) _____

3. Complete Reference - Authors. (Year). Title. Journal, Volume(number), pages.

4. Type of Publication _____
   1. Book
   2. Journal
   3. Technical Report

5. Discipline of Publication _____
   1. Education
   2. Psychology
   3. Social Work
   4. Criminal Justice
   5. Sociology
   6. Anthropology
   7. Psychiatry
   8. Other
   9. Can't tell

Sample

1. Sample Size _____

2. Percentage of Males in Sample _____

3. Percentage of Females in Sample _____

4. Racial Composition of Sample _____
   1. White/Caucasian
   2. African-American
   3. Hispanic/Latino
   4. Native American
   5. Asian/Pacific Islander
   6. Other _____
   7. Sample is racially mixed
   9. Not mentioned

5. Percentage of Minorities _____

6. Average Age of Sample _____

7. Type of Students _____
   1. High School
   2. Middle School/Junior High
   3. Elementary School

8. Average Grade in School _____

9. Specific characteristics of sample _____
   1. None
   2. Delinquent
   3. Low School Achievement
   4. Learning Disability
   5. Special Education

10. Assignment of participants _____
    1. random
    2. matching
    3. convenience sample
    4. other non-random _____

Intervention

1. Setting of Alternative School _____
   1. At a Regular school
   2. Outside of school

2. Daily length of time at alternative school _____
   1. After-school
   2. Half a school day
   3. Full day

3. Numbers of hours per day at alternative schools _____

4. Duration of program _____
   1. 1 to 3 months
   2. 4 to 6 months
   3. 7 to 9 months
   4. 10 to 12 months
   5. Over 12 months

5. Duration of program _____
    1. Half a school semester
    2. One school semester
    3. One school year
    4. More than one school year

6. Number of regular schools in the study _____

7. Number of alternative schools _____

8. Type of school district _____
    1. Urban
    2. Suburban
    3. Rural

DEPENDENT VARIABLES

Outcome Measure #1

1. Type of dependent variable _____
   1. official delinquency
   2. self-reported delinquency
   3. academic behavior (discipline)
   4. school performance (grades)
   5. school performance (standardized tests scores)
   6. school attendance
   7. school attitude
   8. mainstreaming
   9. self-concept
   10. Other

2. Specific type of measure _____
   (what they used for this measure)

3. Method of data collection _____
   1. self-reported
   2. archival (or tests)
   3. reported from someone else

4. Alpha coefficient for interview scales _____

5. Research design _____
   1. pre-post with control group
   2. post with control group
   3. pre-post with no control group
   4. post with no control group
   5. extended follow up with control group
   6. extended follow up with no control group

6. Pre-post sample size _____

7. Pre-post type of statistic _____
   1. F
   2. T
   3. r (correlation)
   4. Other _____

8. Actual value of statistic _____

9. Pre-post significance level of statistic _____

10. Pre- Mean _____

11. Pre- Standard Deviation _____

12. Post- Mean _____

13. Post- Standard Deviation _____

14. Pre-post effectiveness rating _____
    1. negative (-)
    2. none (0)
    3. positive (+)

15. Treatment sample size _____

16. Control sample size _____

17. Group Size _____

18. Treatment-control type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

19. Actual value of statistic _____

20. Significance level of this statistic _____

21. Treatment Mean _____

22. Treatment Standard Deviation _____

23. Control Mean _____

24. Control Standard Deviation _____

25. Treatment-control effectiveness rating _____
    1. control higher (-)
    2. none (0)
    3. treatment higher (+)

Outcome Measure #2

1. Type of dependent variable _____
    1. official delinquency
    2. self-reported delinquency
    3. academic behavior (discipline)
    4. school performance (grades)
    5. school performance (standardized tests scores)
    6. school attendance
    7. school attitude
    8. mainstreaming
    9. self-concept
    10. Other

2. Specific type of measure _____
(what they used for this measure)

3. Method of data collection _____
    1. self-reported
    2. archival (or tests)
    3. reported from someone else

4. Alpha coefficient for interview scales _____

5. Research design _____
    1. pre-post with control group
    2. post with control group
    3. pre-post with no control group
    4. post with no control group
    5. extended follow up with control group
    6. extended follow up with no control group

6. Pre-post sample size _____

7. Pre-post type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

8. Actual value of statistic _____

9. Pre-post significance level of statistic _____

10. Pre- Mean _____

11. Pre- Standard Deviation _____

12. Post- Mean _____

13. Post- Standard Deviation _____

14. Pre-post effectiveness rating _____
    1. negative (-)
    2. none (0)
    3. positive (+)

15. Treatment sample size _____

16. Control sample size _____

17. Group Size _____

18. Treatment-control type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

19. Actual value of statistic _____

20. Significance level of this statistic _____

21. Treatment Mean _____

22. Treatment Standard Deviation _____

23. Control Mean _____

24. Control Standard Deviation _____

25. Treatment-control effectiveness rating _____
    1. control higher (-)
    2. none (0)
    3. treatment higher (+)

Outcome Measure #3

1. Type of dependent variable _____
    1. official delinquency
    2. self-reported delinquency
    3. academic behavior (discipline)
    4. school performance (grades)
    5. school performance (standardized tests scores)
    6. school attendance
    7. school attitude
    8. mainstreaming
    9. self-concept
    10. Other

2. Specific type of measure _____
(what they used for this measure)

3. Method of data collection _____
    1. self-reported
    2. archival (or tests)
    3. reported from someone else

4. Alpha coefficient for interview scales _____

5. Research design _____
    1. pre-post with control group
    2. post with control group
    3. pre-post with no control group
    4. post with no control group
    5. extended follow up with control group
    6. extended follow up with no control group

6. Pre-post sample size _____

7. Pre-post type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

8. Actual value of statistic _____

9. Pre-post significance level of statistic _____

10. Pre- Mean _____

11. Pre- Standard Deviation _____

12. Post- Mean _____

13. Post- Standard Deviation _____

14. Pre-post effectiveness rating _____
    1. negative (-)
    2. none (0)
    3. positive (+)

15. Treatment sample size _____

16. Control sample size _____

17. Group Size _____

18. Treatment-control type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

19. Actual value of statistic _____

20. Significance level of this statistic _____

21. Treatment Mean _____

22. Treatment Standard Deviation _____

23. Control Mean _____

24. Control Standard Deviation _____

25. Treatment-control effectiveness rating _____
    1. control higher (-)
    2. none (0)
    3. treatment higher (+)

Outcome Measure #4

1. Type of dependent variable _____
    1. official delinquency
    2. self-reported delinquency
    3. academic behavior (discipline)
    4. school performance (grades)
    5. school performance (standardized tests scores)
    6. school attendance
    7. school attitude
    8. mainstreaming
    9. self-concept
    10. Other

2. Specific type of measure _____
(what they used for this measure)

3. Method of data collection _____
    1. self-reported
    2. archival (or tests)
    3. reported from someone else

4. Alpha coefficient for interview scales _____

5. Research design _____
    1. pre-post with control group
    2. post with control group
    3. pre-post with no control group
    4. post with no control group
    5. extended follow up with control group
    6. extended follow up with no control group

6. Pre-post sample size _____

7. Pre-post type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

8. Actual value of statistic _____

9. Pre-post significance level of statistic _____

10. Pre- Mean _____

11. Pre- Standard Deviation _____

12. Post- Mean _____

13. Post- Standard Deviation _____

14. Pre-post effectiveness rating _____
    1. negative (-)
    2. none (0)
    3. positive (+)

15. Treatment sample size _____

16. Control sample size _____

17. Group Size _____

18. Treatment-control type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

19. Actual value of statistic _____

20. Significance level of this statistic _____

21. Treatment Mean _____

22. Treatment Standard Deviation _____

23. Control Mean _____

24. Control Standard Deviation _____

25. Treatment-control effectiveness rating _____
    1. control higher (-)
    2. none (0)
    3. treatment higher (+)

Outcome Measure #5

1. Type of dependent variable _____
    1. official delinquency
    2. self-reported delinquency
    3. academic behavior (discipline)
    4. school performance (grades)
    5. school performance (standardized tests scores)
    6. school attendance
    7. school attitude
    8. mainstreaming
    9. self-concept
    10. Other

2. Specific type of measure _____
(what they used for this measure)

3. Method of data collection _____
    1. self-reported
    2. archival (or tests)
    3. reported from someone else

4. Alpha coefficient for interview scales _____

5. Research design _____
    1. pre-post with control group
    2. post with control group
    3. pre-post with no control group
    4. post with no control group
    5. extended follow up with control group
    6. extended follow up with no control group

6. Pre-post sample size _____

7. Pre-post type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

8. Actual value of statistic _____

9. Pre-post significance level of statistic _____

10. Pre- Mean _____

11. Pre- Standard Deviation _____

12. Post- Mean _____

13. Post- Standard Deviation _____

14. Pre-post effectiveness rating _____
    1. negative (-)
    2. none (0)
    3. positive (+)

15. Treatment sample size _____

16. Control sample size _____

17. Group Size _____

18. Treatment-control type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

19. Actual value of statistic _____

20. Significance level of this statistic _____

21. Treatment Mean _____

22. Treatment Standard Deviation _____

23. Control Mean _____

24. Control Standard Deviation _____

25. Treatment-control effectiveness rating _____
    1. control higher (-)
    2. none (0)
    3. treatment higher (+)

Outcome Measure #6

1. Type of dependent variable _____
    1. official delinquency
    2. self-reported delinquency
    3. academic behavior (discipline)
    4. school performance (grades)
    5. school performance (standardized tests scores)
    6. school attendance
    7. school attitude
    8. mainstreaming
    9. self-concept
    10. Other

2. Specific type of measure _____
(what they used for this measure)

3. Method of data collection _____
    1. self-reported
    2. archival (or tests)
    3. reported from someone else

4. Alpha coefficient for interview scales _____

5. Research design _____
    1. pre-post with control group
    2. post with control group
    3. pre-post with no control group
    4. post with no control group
    5. extended follow up with control group
    6. extended follow up with no control group

6. Pre-post sample size _____

7. Pre-post type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

8. Actual value of statistic _____

9. Pre-post significance level of statistic _____

10. Pre- Mean _____

11. Pre- Standard Deviation _____

12. Post- Mean _____

13. Post- Standard Deviation _____

14. Pre-post effectiveness rating _____
    1. negative (-)
    2. none (0)
    3. positive (+)

15. Treatment sample size _____

16. Control sample size _____

17. Group Size _____

18. Treatment-control type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

19. Actual value of statistic _____

20. Significance level of this statistic _____

21. Treatment Mean _____

22. Treatment Standard Deviation _____

23. Control Mean _____

24. Control Standard Deviation _____

25. Treatment-control effectiveness rating _____
    1. control higher (-)
    2. none (0)
    3. treatment higher (+)

Outcome Measure #7

1. Type of dependent variable _____
    1. official delinquency
    2. self-reported delinquency
    3. academic behavior (discipline)
    4. school performance (grades)
    5. school performance (standardized tests scores)
    6. school attendance
    7. school attitude
    8. mainstreaming
    9. self-concept
    10. Other

2. Specific type of measure _____
(what they used for this measure)

3. Method of data collection _____
    1. self-reported
    2. archival (or tests)
    3. reported from someone else

4. Alpha coefficient for interview scales _____

5. Research design _____
    1. pre-post with control group
    2. post with control group
    3. pre-post with no control group
    4. post with no control group
    5. extended follow up with control group
    6. extended follow up with no control group

6. Pre-post sample size _____

7. Pre-post type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

8. Actual value of statistic _____

9. Pre-post significance level of statistic _____

10. Pre- Mean _____

11. Pre- Standard Deviation _____

12. Post- Mean _____

13. Post- Standard Deviation _____

14. Pre-post effectiveness rating _____
    1. negative (-)
    2. none (0)
    3. positive (+)

15. Treatment sample size _____

16. Control sample size _____

17. Group Size _____

18. Treatment-control type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

19. Actual value of statistic _____

20. Significance level of this statistic _____

21. Treatment Mean _____

22. Treatment Standard Deviation _____

23. Control Mean _____

24. Control Standard Deviation _____

25. Treatment-control effectiveness rating _____
    1. control higher (-)
    2. none (0)
    3. treatment higher (+)

Outcome Measure #8

1. Type of dependent variable _____
    1. official delinquency
    2. self-reported delinquency
    3. academic behavior (discipline)
    4. school performance (grades)
    5. school performance (standardized tests scores)
    6. school attendance
    7. school attitude
    8. mainstreaming
    9. self-concept
    10. Other

2. Specific type of measure _____
(what they used for this measure)

3. Method of data collection _____
    1. self-reported
    2. archival (or tests)
    3. reported from someone else

4. Alpha coefficient for interview scales _____

5. Research design _____
    1. pre-post with control group
    2. post with control group
    3. pre-post with no control group
    4. post with no control group
    5. extended follow up with control group
    6. extended follow up with no control group

6. Pre-post sample size _____

7. Pre-post type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

8. Actual value of statistic _____

9. Pre-post significance level of statistic _____

10. Pre- Mean _____

11. Pre- Standard Deviation _____

12. Post- Mean _____

13. Post- Standard Deviation _____

14. Pre-post effectiveness rating _____
    1. negative (-)
    2. none (0)
    3. positive (+)

15. Treatment sample size _____

16. Control sample size _____

17. Group Size _____

18. Treatment-control type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

19. Actual value of statistic _____

20. Significance level of this statistic _____

21. Treatment Mean _____

22. Treatment Standard Deviation _____

23. Control Mean _____

24. Control Standard Deviation _____

25. Treatment-control effectiveness rating _____
    1. control higher (-)
    2. none (0)
    3. treatment higher (+)

Outcome Measure #9

1. Type of dependent variable _____
    1. official delinquency
    2. self-reported delinquency
    3. academic behavior (discipline)
    4. school performance (grades)
    5. school performance (standardized tests scores)
    6. school attendance
    7. school attitude
    8. mainstreaming
    9. self-concept
    10. Other

2. Specific type of measure _____
(what they used for this measure)

3. Method of data collection _____
    1. self-reported
    2. archival (or tests)
    3. reported from someone else

4. Alpha coefficient for interview scales _____

5. Research design _____
    1. pre-post with control group
    2. post with control group
    3. pre-post with no control group
    4. post with no control group
    5. extended follow up with control group
    6. extended follow up with no control group

6. Pre-post sample size _____

7. Pre-post type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

8. Actual value of statistic _____

9. Pre-post significance level of statistic _____

10. Pre- Mean _____

11. Pre- Standard Deviation _____

12. Post- Mean _____

13. Post- Standard Deviation _____

14. Pre-post effectiveness rating _____
    1. negative (-)
    2. none (0)
    3. positive (+)

15. Treatment sample size _____

16. Control sample size _____

17. Group Size _____

18. Treatment-control type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

19. Actual value of statistic _____

20. Significance level of this statistic _____

21. Treatment Mean _____

22. Treatment Standard Deviation _____

23. Control Mean _____

24. Control Standard Deviation _____

25. Treatment-control effectiveness rating _____
    1. control higher (-)
    2. none (0)
    3. treatment higher (+)

Outcome Measure #10

1. Type of dependent variable _____
    1. official delinquency
    2. self-reported delinquency
    3. academic behavior (discipline)
    4. school performance (grades)
    5. school performance (standardized tests scores)
    6. school attendance
    7. school attitude
    8. mainstreaming
    9. self-concept
    10. Other

2. Specific type of measure _____
(what they used for this measure)

3. Method of data collection _____
    1. self-reported
    2. archival (or tests)
    3. reported from someone else

4. Alpha coefficient for interview scales _____

5. Research design _____
    1. pre-post with control group
    2. post with control group
    3. pre-post with no control group
    4. post with no control group
    5. extended follow up with control group
    6. extended follow up with no control group

6. Pre-post sample size _____

7. Pre-post type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

8. Actual value of statistic _____

9. Pre-post significance level of statistic _____

10. Pre- Mean _____

11. Pre- Standard Deviation _____

12. Post- Mean _____

13. Post- Standard Deviation _____

14. Pre-post effectiveness rating _____
    1. negative (-)
    2. none (0)
    3. positive (+)

15. Treatment sample size _____

16. Control sample size _____

17. Group Size _____

18. Treatment-control type of statistic _____
    1. F
    2. T
    3. r (correlation)
    4. Other _____

19. Actual value of statistic _____

20. Significance level of this statistic _____

21. Treatment Mean _____

22. Treatment Standard Deviation _____

23. Control Mean _____

24. Control Standard Deviation _____

25. Treatment-control effectiveness rating _____
    1. control higher (-)
    2. none (0)
    3. treatment higher (+)

Overall Assessments

1. Author's Effective Assessment _____
    1. negative (-)
    2. none (0)
    3. positive (+)

2. Global (your) Effectiveness Assessment _____
    1. negative (-)
    2. none (0)
    3. positive (+)

3. Reasons for Your Assessment:

APPENDIX B

APPENDIX B

Student Interview Form

INSTRUCTIONS

Read the questions and responses and then write the response in the blank or circle the appropriate number. Legibility and neatness are stressed when filling out the questionnaire.

The interviews are scheduled to last between ten and fifteen minutes. While time is important, it is more critical that the respondent understand every question. It may be necessary to prompt the respondent. This is okay, but please read each question as it is written.

The last part of the questionnaire asks the respondent to recall the number of times he/she has participated in different activities. Do not accept answers like "a lot," "a few," or "a couple." If this occurs, ask the respondent to estimate the number.

Please remind the respondent that responses are strictly confidential and will not be used for purposes other than research.

Hello, my name is (your name here), and I am from Michigan State University. We are conducting a study of the school program in which you may be participating. There are no right or wrong answers to the questions I am going to ask you; we are interested in obtaining a variety of opinions of those who are being considered for this program. Please answer these questions as precisely and honestly as you can. I want to stress that anything you tell me will be kept confidential. Your teachers and parents will not know your answers.

More students have been referred to the program by the school than there is room for. Thus the only fair way of selecting is through a lottery. At the end of our discussion I will ask you to choose an envelope which will tell you if you will be in the program or not. Your answers to these questions will not determine if you will be in the program or not.

Part One

I am going to read a statement after which I want you to tell me which of these responses best describes how you feel about that statement:

(1) False
(2) Mostly False
(3) Mostly True
(4) True

1. Teachers "put down" students. _____

2. Teachers go out of their way to help students. _____

3. I can talk to teachers about things that matter to me. _____

4. Teachers do not trust students. _____

5. Teachers are more like friends than authorities. _____

6. I can learn things at school. _____

7. You just can't win in school. _____

8. I can't be successful in school. _____

9. I don't have much chance of getting passing grades in school. _____

9a. You can succeed in school if you try. _____

10. I almost never expect to do well in the classes the school makes me take. _____

11. The teachers and principals don't want me in their school. _____

11a. I feel welcome at school. _____

12. I get the feeling that the school thinks I'm no good. _____

13. This school treats me like I'm dumb. _____

14. The teachers and principals care about my feelings. _____

Part Two

Please answer the following questions as honestly as possible. I want to remind you that your answers will not be used for anything other than research purposes.

1. How close do you come to doing the best work you are able to do in school?
   1) Not at all close
   2) Not very close
   3) Somewhat close
   4) Quite close
   5) Very close

2. How hard do you think you work in school compared to the other students in your grade?
   1) Much less
   2) Less
   3) About average
   4) Harder
   5) Much harder

3. How satisfied are you with the way you're actually doing in school?
   1) Not at all satisfied
   2) Not very satisfied
   3) Somewhat satisfied
   4) Quite satisfied
   5) Very satisfied

4. Compared to other students, would you say you like school?
   1) Less than most
   2) More than most
   3) About the same as most

5. How much do you like school?
   1) Not at all
   2) Not much
   3) Somewhat
   4) Pretty well
   5) A lot

6. How interested are you in most of your subjects at school?
   1) Bored most of the time
   2) More bored than interested
   3) More interested than bored
   4) Interested most of the time

7. How much schooling would you <u>like</u> to get eventually?
[DON'T READ THE RESPONSE OPTIONS.]
1) Some middle school
2) Complete middle school
3) Some high school
4) High school graduation
5) On the job apprenticeship
6) Trade or business school
7) Some college or junior college
8) College graduation
9) Post graduate

8. How much schooling do you <u>actually</u> expect to get? _____
[Same response options as #7, DON'T READ RESPONSE OPTIONS]

9. How important is getting good grades to you personally?
It is:
1) Very important
2) Somewhat important
3) Fairly important
4) Completely unimportant

10. How do you feel about the following statement: "I try hard in school."
1) Strongly agree
2) Agree
3) Disagree
4) Strongly disagree

11. Would you like to be the kind of person your best friends are?
1) In every way
2) In most ways
3) In some ways
4) In just a few ways
5) Not at all
6) Not applicable

12. How many close friends do you have? _____

13. How many of your close friends have ever been picked up by the police? _____

14. How many times have you been picked up by the police since we last talked to you? _____

For what? _____

Part Three

Again, I am going to read a statement and this time I want you to tell me which of these responses best describes how you feel about that statement:

(1) Never
(2) Seldom
(3) Sometimes
(4) Often
(5) Almost Always

1. I feel that my life is not very useful. _____

2. I feel I do a good job as a student. _____

3. Sometimes I think I am no good at all. _____

4. I take a positive attitude toward myself. _____

5. I do a good job these days. _____

6. I feel that I am as worth as much as other people. _____

Part Four

Since the beginning of the school year in September, how often have you:

1. Skipped class not including whole days. _____
2. Gone onto someone's property when they didn't want you to be there or without permission. _____
3. Gone into a house or building when you weren't supposed to be there. _____
4. Seriously threatened to hurt someone. _____
5. Been told to bring your parents to school for something you did wrong. _____
7. Hurt someone badly enough for him/her to need bandages or a doctor. _____
8. Taken some part of a car or some gasoline. _____
9. Hit a member of your family (in anger). _____
10. Not been allowed to go to school until the superintendent or principal told you that you could go again (been suspended). _____
11. Taken something not belonging to you worth less than $2.00. _____
12. Drunk beer or liquor. _____
13. Run away from home. _____
14. Skipped a full day of school. _____
15. Been sent to the principal's office for bad behavior. _____
16. Carried a gun or a knife other than for hunting. _____
17. Taken something not belonging to you worth over $50.00. _____
18. Set fire to someone else's property. _____

19. Used or threatened to use a weapon to get something from a person. _____

20. Taken something from a store without paying for it (regardless of the price). _____

21. Taken a car without the owner's permission (include joy-riding). _____

22. Smoked marijuana. _____

23. Taken something from a person by force (may or may not involve a weapon). _____

24. Beaten up on somebody or fought someone (physically). _____

25. Used crack or cocaine. _____

26. Bought or gotten something that was stolen by someone else. _____

27. Broken into a place and stolen something. _____

28. Taken things worth less than $50.00. _____

29. Taken illegal drugs or pills, other than marijuana or crack/cocaine. _____

Demographics

1. Grade in School _____

2. Date of Birth _____

3. Sex _____

Thank you for your time and cooperation. We would like to talk to you again at the end of this semester whether or not you participate in the program. We will contact you then.

APPENDIX C

APPENDIX C

Full Regression Models from the Path Analysis

Dependent Variable.. Academic Prospects

Multiple R	.31925
R Square	.10192
Adjusted R Square	.07947
Standard Error	2.77650

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	69.98903	34.99452
Residual	80	616.71510	7.70894

F = 4.53947 Signif F = .0136

Variable	B	SE B	Beta	T	Sig T
Nontarg	1.140396	.379376	.318505	3.006	.0035
Target	.093164	.518303	.019046	.180	.8578
(Constant)	.076826	.307606		.250	.8034

Dependent Variable.. Student Role

Multiple R	.51724
R Square	.26754
Adjusted R Square	.23973
Standard Error	3.97347

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	455.59156	151.86385
Residual	79	1247.28858	15.78846

F = 9.61866 Signif F = .0000

Variable	B	SE B	Beta	T	Sig T
Nontarg	1.270628	.572770	.225358	2.218	.0294
Target	.909981	.741898	.118133	1.227	.2236
Acad. Pros.	.600743	.160003	.381488	3.755	.0003
(Constant)	.037035	.440389		.084	.9332

Dependent Variable.. School Attitude

Multiple R	.56648
R Square	.32091
Adjusted R Square	.28608
Standard Error	3.40689

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	4	427.81533	106.95383
Residual	78	905.33678	11.60688

F = 9.21469 Signif F = .0000

Variable	B	SE B	Beta	T	Sig T
Nontarg	-.841438	.506163	-.168666	-1.66	.1004
Target	-.473626	.642138	-.069491	-.738	.4630
Acad. Pros.	.257804	.148926	.185027	1.73	.0874
Student Role	.448085	.096466	.506648	4.65	.0000
(Constant)	-.032295	.377611		-.086	.9321

Dependent Variable.. School Disruption

Multiple R	.51216
R Square	.26230
Adjusted R Square	.21440
Standard Error	.62024

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	5	10.53263	2.10653
Residual	77	29.62159	0.38470

F = 5.47582 Signif F = .0002

Variable	B	SE B	Beta	T	Sig T
Nontarg	.021182	.093767	.024465	.226	.8219
Target	-.041105	.117311	-.034750	-.350	.7270
Acad. Pros.	.005689	.027628	.023526	.206	.8374
Student Role	.007303	.019845	.047555	.368	.7139
Sch. Attitude	-.094098	.020614	-.542194	-4.57	.0000
(Constant)	.666658	.068749		9.70	.0000

Dependent Variable.. Self-Reported Delinquency

Multiple R	.49075
R Square	.24083
Adjusted R Square	.18090
Standard Error	.28402

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	6	1.94481	.32414
Residual	76	6.13053	.08066

F = 4.01830 Signif F = .0015

Variable	B	SE B	Beta	T	Sig T
Nontarg	.075266	.042952	.193849	1.75	.0837
Target	.009964	.053761	.018783	.185	.8535
Acad. Pros.	-.008561	.012655	-.078943	-.676	.5008
Student Role	-.015337	.009095	-.222722	-1.69	.0958
Sch. Attitude	.007239	.010640	.093014	.680	.4983
Sch. Disruption	.187608	.052184	.418346	3.60	.0006
(Constant)	.171250	.046918		3.65	.0005

LIST OF REFERENCES

LIST OF REFERENCES

Arnove, R.F., & Strout, T. (1980). Alternative schools for disruptive youth. Educational Forum, 44, 453-471.

Babbie, E. (1986). The practice of social research 4th ed. Belmont, CA: Wadsworth Publishing.

Bachman, J.G. (1970). Youth in transition: volume II. The impact of family background and intelligence on tenth grade boys. Ann Arbor, MI: University of Michigan.

Barr, R.D., Colston, B., & Parrett, W.H. (1977). The effectiveness of six alternative public schools. Viewpoints, 53(4), 1-30.

Beale, E.M.L., & LIttle, R.J.A. (1975). Missing values in multivariate analysis. Journal of the Royal Statistical Society, Series B, 37, 129-145.

Bohrnstedt, G.W., & Knoke, D. (1988). Statistics for social data analysis 2nd ed. Itasca, ILL: F.E. Peacock Publishers.

Bynner, J.M., O'Malley, P.M., & Bachman, J.G. (1981). Self-esteem and delinquency revisited. Journal of Youth and Adolescence, 10(6), 407-441.

Cernkovich, S.A., & Giordano, P.C. (1992). School bonding, race, and delinquency. Criminology, 30(2), 261-287.

Cohill, M.B. (1991). Why do I like broccoli? Journal of Criminal Law and Criminology, 82(1), 125-132.

Cook, T.D., & Campbell, D.T. (1979). Quasi-experimentation: Design & analysis for field settings. Boston: Houghton Mifflin.

Cortina, J.M. (1993). What is coefficient alpha? An examination of theory and applications. Journal of Applied Psychology, 78, 98-104.

Deal, T.E., & Nolan, R.R. (1978). Alternative Schools. Chicago: Nelson-Hall.

Deitz, G.E., (1969). A comparison of delinquents with nondelinquents on self-concept, self-acceptance, and parental identification. Journal of Genetic Psychology, 115, 285-295.

Dishion, T.J., Loeber, R., Stouthamer-Loeber, M., & Patterson, G.R. (1984). Skill deficits and male adolescent delinquency. Journal of Abnormal Psyhcology, 12(1), 37-54.

Driscoll, B.M., Mandell, L., & Schneider, S.J. (1985). Alternative educational model for junior high school students not meeting promotional standards. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Quebec.

Duke, D.L. (1978). The retransformation of the school. Chicago: Nelson-Hall.

Duke, D.L., & Muzio, I. (1978). How effective are alternative schools? - A review of recent evaluations and reports. Teachers College Record, 79(3), 461-483.

Duke, D.L., & Perry, C. (1978). Can alternative schools succeed where Benjamin Spock, Spiro Agnew, and B.F. Skinner have failed? Adolescence, 13(51), 375-392.

Elliott, D.S., & Ageton, S.S. (1980). Reconciling race and class differences in self-reported and official estimates of delinquency. American Sociological Review, 45, 95-110.

Elliott, D.S., Huizuinga, D., & Ageton, S.S. (1985). Explaining delinquency and drug use. Beverly Hills: Sage.

Elliott, D.S., & Voss, H.L. (1974). Delinquency and dropout. Lexington, MA: Lexington Books.

Ellison, T.A., & Trickett, E.J. (1978). Environmental structure and the perceived similarity-satisfaction relationship: Traditional and alternative schools. Journal of Personality, 46, 57-71.

Fagan, J., & Pabon, E. (1990). Contributions of delinquency and substance use to school dropout among inner-city youths. Youth and Society, 21(3), 306-354.

Farrington, D.P. (1992). Explaining the beginning, progress, and ending of antisocial behavior from birth to adulthood. In J. McCord (Ed.), Facts, Frameworks, and Forecasts: Advances in Criminological Theory (pp.253-286). New Brunswick, NJ: Transaction Books.

Frazier, L.H., & Baenen, N.R. (1988). An alternative for high risk students: The school-community guidance center evaluation, 1987-1988. Austin: Texas Office of Research and Evaluation.

Garrison, R.W. (1987). Alternative school for disruptive youth: NSSC resource paper. National School Safety Center, Pepperdine University: Office of Juvenile Justice and Delinquency Prevention.

Gaite, A.J., & Rankin, R.J. (1975). Patterns of achievement, attitude, and behavior in a tax supported alternative school. Journal of Experimental Psychology, 43(3), 35-39.

Glass, G.V., McGaw, B., Smith, M.L. (1981). Meta-analysis in social research. Beverly Hills: Sage Publications.

Gold, M. (1978). Self-esteem and delinquent behavior: A theory of alternative schools. Crime and Delinquency, 24, 290-308.

Gold, M., & Mann, D.W. (1984). Expelled to a friendlier place: A study of alternative schools. Ann Arbor, MI: University of Michigan Press.

Gold, M., & Mann, D.W. (1982). Alternative schools for troublesome secondary students. The Urban Review, 14(4), 305-316.

Gold, M., & Mann, D.W. (1972). Delinquency as a defense. American Journal of Orthopsychiatry, 42, 463-469.

Gottfredson, D.C. (1987). Examining the potential for delinquency prevention through alternative education. Today's Delinquent, 6, 87-100.

Gottfredson, D.C., McNeil, R.J., & Gottfredson, G.D. (1991). Social area influences on delinqency: A multilevel analysis. Journal of Research in Crime and Delinquency, 28(2), 197-226.

Gottfredson, G.D. (1987). American education -- American delinquency. Today's Delinquent, 6, 1-65.

Gottfredson, G.D. (1983). The school action effectiveness study: Second interim report, part II. Report No. 342. Baltimore: Center for Social Organization of Schools. (ERIC Document Reproduction Service No. ED 240 421)

Gottfredson, G.D. (1981). Schooling and delinquency. In S. Martin, L. Sechrest, and R. Redner (Eds.), New Directions in the Rehabilitation of Criminal Offenders (pp. 424-469). Washington, D.C.: National Academy Press.

Graham, J.W., & Donaldson, S.I. (1993). Evaluating interventions with differential attrition: The importance of nonresponse mechanisms and use of follow-up data. Journal of Applied Psychology, 78(1), 119-128.

Graham, L.D. (1991). Predicting academic success of students in a master of business administration program. Educational and Psychological Measurement, 51, 721-727.

Hansen, W.B., Collins, L.M., Malotte, C.K., & Fielding, J.E. (1985). Journal of Behaviorial Medicine, 8, 261-275.

Hawkins, J.D., & Lishner, D.M. (1987). Schooling and delinquency. In E.H. Johnson (Ed.), Handbook on Crime and Delinquency (pp. 179-221). New York: Greenwood Press.

Hawkins, J.D., & Wall, J.S. (1980). Alternative education: Exploring the delinquency prevention potential. Washington, D.C.: U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention.

Hindelang, M.J., Hirschi, T., & Weis, J.G. (1981). Measuring delinquency. Beverly Hills, CA: Sage.

Hirschi, T. (1969). Causes of delinquency. Berkely: University of California Press.

Huizinga, D., & Elliott, D.S. (1986). Reassessing the reliability and validity of self-report delinquency measures. Journal of Quantitative Delinquency, 2(4), 293-327.

Hunter, J.E., & Schmidt, F.L. (1990). Methods of meta-analysis: Correcting error and bias in research findings. Newbury Park, CA: Sage Publications.

Jarjoura, G.R., (1993). Does dropping out of school enhance delinquent involvement? Results from a large-scale national probability sample. Criminology, 31(2), 149-172.

Junger-Tas, J. (1992). An empirical test of social control theory. Journal of Quantitative Criminology, 8(1), 9-27.

Kelly, D.H., & Balch, R.W. (1971). Social origins and school failure: A re-examination of Cohen's theory of working class delinquency. Pacific Sociological Review, 14, 413-430.

Kerlinger, F.N. (1986). Foundations of behavioral research (3rd ed.). Fort Worth: Holt, Rinehart and Winston.

Kolvin, I., Miller, F.J.W., Fleeting, M., & Kolvin, P.A. (1988). Risk/protective factors for offending with particular reference to deprivation. In M.I. Rutter (Ed.), Studies of Psychosocial Risk: The Power of Longitudinal Data (pp. 77-95). Cambridge, UK: Cambridge University.

Korn, C.V. (1992). Alternative American schools: ideals in action. Albany, NY: State University of New York Press.

Kromrey, J.D., & Hines, C.V. (1994). Nonrandomly missing data in multiple regression: An empirical comparison of common mising-data treatments. Educational and Psychological Measurement, 54(3), 573-593.

Lawrence, R. (1985). School performance, containment theory, and delinquent behavior. Youth and Society, 17(1), 69-95.

Liazos, A. (1978). School, alienation, and delinquency. Crime and Delinquency, 24, 355-370.

Lipsey, M. W. (1990). Juvenile delinquency treatment: A meta-analysis inquiry into the variability of effects. In T.D. Cook, H. Cooper, D.S. Cordray, H. Hartmann, L.V. Hedges, R.J. Light, T.A. Louis, & F. Mosteller (eds.), Meta-Analysis for Explanation: A Casebook (pp. 83-127). New York: Russell Sage Foundation.

Little, R.J.A., & Rubin, D.B. (1987). Statistical analysis with missing data. New York: Wiley.

Loeber, R. (1990). Development and risk factors of juvenile antisocial behavior and delinquency. Clinical Psychology Review, 10, 1-41.

Loeber, R., & Dishion, T. (1983). Early predictors of male delinquency: a review. Psychological Bulletin, 94(1), 68-99.

Loeber, R., & Farrington, D.P. (1994). Problems and solutions in longitudinal and experimental treatment studies of child psychopathology and delinquency. Journal of Consulting and Clinical Psychology, 62(5), 887-900.

Loeber, R., & Schmaling, K.B. (1985). The utility of differentiating between mixed and pure forms of antisocial child behavior. Journal of Abnormal Psychology, 13(2), 315-336.

Loeber, R., Stouthamer-Loeber, M., van Kammen, W., & Farrington, D.P. (1991). Initiation, escalation and desistance in juvenile offending and their correlates. Journal of Criminal Law and Criminology, 82(1), 36-82.

Logan, C.H., & Gaes, G.G. (1993). Meta-analysis and the rehabilitation of punishment. Justice Quarterly, 10(2), 245-263.

Mak, A. (1991). Psychosocial control characteristics of delinquents and nondelinquents. Criminal Justice and Behavior, 18(3), 287-304.

Marteau, T.M. (1994). Psychology and screening: Narrowing the gap between efficacy and effectiveness. British Journal of Clinical Psychology, 33, 1-10.

Mayer, J.P., Gensheimer, L.K., Davidson, W.S., & Gottschalk, R. (1986). Social learning treatment within juvenile justice: A meta-analysis of impact in the natural environment. In S.J. Apter, & A.P. Goldstein (Eds.), Youth Violence: Programs and Prospects (pp. 24-38). New York: Pergamon Press.

McCarthy, J.D., & Hoge, D.R. (1984). The dynamics of self-esteem and delinquency. American Journal of Sociology, 90, 396-410.

McCauley, B., & Dornbusch, S.M. (1978). Students who choose alternative public high schoools - their background, their education, and their academic achievement, a comparison of matched samples. In T.E. Deal and R.R. Nolan (Eds.), Alternative Schools (pp.211-230). Chicago: Nelson-Hall.

Moffitt, T.E., & Henry, B. (1989). Neuropsychological assessment of executive function in self-reported delinquents. Development and Psychopathology, 1, 105-118.

Moore, D.T. (1978). Social order in an alternative school. Teachers College Record, 79(3), 437-460.

Norusis, M.J. (1992). SPSS/PC+ advanced statistics version 5.0. Chicago: SPSS Inc.

Pedhazur, E.J., (1982). Multiple regression in behavioral research (2nd ed.). Fort Worth: Holt, Rinehart and Winston.

Phillips, J.C., & Kelly, D.H. (1979). School failure and delinquency: Which causes which? Criminology, 17(2), 194-207.

Pink, W.T. (1982). Academic failure, student social conflict, and delinquent behavior. Urban Review, 14(3), 141-180.

Piper, W.E., Joyce, A.S., Azim, H.F.A., & Rosie, J.S. (1994). Patient characteristics and success in day treatment. Journal of Nervous and Mental Disease, 182(7), 381-386.

Polk, K. (1984). The new marginal youth. Crime and Delinquency, 30(3), 462-480.

Raymond, M.R., & Roberts, D.M. (1987). A comparison of methods for treating incomplete data in selection research. Educational and Psychological Measurement, 47, 13-26.

Raywid, M.A. (1983). Alternative schools as a model for public education. Theory Into Practice, 22(3), 190-197.

Raywid, M.A. (1981). The first decade of public school alternatives. Phi Delta Kappan, 62, 551-554.

Reckless, W.C., Dinitz, S., & Murray, E. (1956). Self concept as an insulator against delinquency. American Sociological Review, 21, 744-746.

Reilly, D.H., & Reilly, J.L. (1983). Alternative schools: Issues and directions. Journal of Instructional Psychology, 10(2), 89-98.

Reilly, D.H., Reilly, J.L., & West, E.L. (1982). An alternative learning school: student results and system considerations. Journal of Instructional Psychology, 9(3), 122-132.

Reisler, R., & Friedman, M.S. (1978). Radical misfits? How students from an alternative junior high school adapted to a conventional school. Educational Theory, 28(1), 75-81.

Richards, H.C., Gaver, D., Golicz, H. (1984). Academically unpredictable school children: Their attitudes toward school subjects. Journal of Educational Research, 77(5), 273-276.

Rosenberg, F.R., & Rosenberg, M. (1978). Self-esteem and delinquency. Journal of Youth and Adolescence, 7, 279-291.

Rosenthal, R. (1979). The "file drawer problem" and tolerance for null results. Psychological Bulletin, 86, 638-641.

Sampson, R.J., & Laub, J.H. (1993). Crime in the making: pathways and turning points through life. Cambridge, MA: Harvard University Press.

Schmitt, N., & Klimoski, R. (1991). Research methods in human resources management. Cincinnati: South-Western.

Sederstrom, J., & Weis, J. (1981). The role of school in delinquency prevention. Seattle: University of Washington.

Short, J.F. (1990). Schools and communities as behavior settings for juvenile delinquency. In J.F. Short (Ed.), Delinquency and Society (pp. 84-105). Englewood Cliffs, NJ: Prentice-Hall.

Singleton, R., Straits, B.C., Straits, M.M., & McAllister, R.J. (1988). Approaches to social research. New York: Oxford University Press.

Singleton, S., Boyer, D., & Dorsey, P. (1972). Xanadu: a study of the structure crisis in an alternative school. Review of Educational Research, 42(4), 525-531.

Smith, V.H. (1974). Alternative Schools. Lincoln, NE: Professional Educators.

Stouthamer-Loeber, M., Loeber, R., Farrington, D.P., Zhang, Q., van Kammen, W., & Maguin, E. (1993). The double edge of protective and risk factors for delinquency: interrelations and developmental patterns. Development and Psychology, 5, 683-701.

Tangri, S.S., & Schwartz, M. (1967). Delinquency research and the self concept variable. Journal of Criminal Law, Criminology, and Police Science, 58, 182-190.

Thornberry, T.P., Moore, M., & Christenson, R.L. (1985). The effect of dropping out of high school on subsequent criminal behavior. Criminology, 23(1), 3-18.

Tracy, P.E., Wolfgang, M.E., & Figlio, R.M. (1990). Prevalence of delinquency. In P.E. Tracy, M.E. Wolfgang, & R.M. Figlio (Eds.), Delinquency Careers in Two Birth Cohorts (pp. 37-56). New York: Plenum Press.

Tremblay, R.E., Masse, B., Perron, D., Leblanc, M., Schwartzman, A.E., & Ledingham, J.E. (1992). Early disruptive behavior, poor school achievement, delinquent behavior, and delinquent personality: Longitudinal analyses. Journal of Consulting and Clinical Psychology, 60(1), 64-72.

Trickett, E.J., McConahay, J.B., Phillips, D., & Ginter, M.A. (1985). Natural experiments and the education context: The environment and effects of an alternative inner-city public school on adolescents. American Journal of Community Psychology, 13(6), 617-643.

Wachter, K.W., & Straf, M.L. (Eds.). (1990). The future of meta-analysis. New York: Russell Sage Foundation.

Wells, A.S. (1993). Time to choose: America at the crossroads of school choice policy. New York: Hill and Wang.

Wiatrowski, M., & Anderson, K.L. (1987). The dimensionality of the social bond. Journal of Quantitative Criminology, 3(1), 65-81.

Wolf, F.M. (1986). Meta-analysis: Quantitative methods for research sythesis. Beverly Hills: Sage Publications.

Young, T.W. (1990). Public alternative education: Options and choice for today's schools. New York: Teachers College, Columbia University.

LIST OF STUDIES IN THE META-ANALYSIS

LIST OF STUDIES IN THE META-ANALYSIS

Anderson, S.D. (1987). Improving achievement, behavior, and parent involvement for middle school students through a behavior management program. (ERIC Document Reproduction Service No. ED 287 583)

Bournazos, K. (1975). The street academy. Final evaluation report. Kalamazoo, MI: Grand Rapids Public Schools.

Bynum, T.S., Cox, S.M., & Davidson, W.S. (1993). Evaluation of three day treatment programs for delinquent youth in Wayne County (MI). Detroit: Wayne County Department of Health and Community Services.

Capell, F.J. (1981). A study of alternatives in American education, Vol. VI: Student outcomes at Alum Rock 1974-1976. Santa Monica, CA: Rand Corporation.

Ellison, T.A., & Trickett, E.J. (1978). Environmental structure and the perceived similarity-satisfaction relationship: Traditional and alternative schools. Journal of Personality, 46, 57-71.

Erickson, E.L., Bournazos, K., Walizer, M.H., & Sonnad, S.R. (1975). Final evaluation report. The southeast community education center. Kalamazoo, MI: Grand Rapids Public Schools.

Foley, E., & Crull, P. (1984). Educating the at-risk adolescent. More lessons from alternative high schools. A report. New York: Public Education Association. (ERIC Document Reproduction Service No. ED 253 596)

Gaite, A.J., & Rankin, R.J. (1975). Patterns of achievement, attitude, and behavior in a tax supported alternative school. Journal of Experimental Psychology, 43(3), 35-39.

Gibboney, R.A., & Langsdorf, M.G. (1972). Final evaluation report for the alternative schools project 1971-72. Philadelphia: Educational Development Center, Bureau of Elementary and Secondary Education.

Gold, M., & Mann, D.W. (1984). Expelled to a friendlier place: A study of alternative schools. Ann Arbor, MI: University of Michigan Press.

Gottfredson, G.D. (1983). The school action effectiveness study: Second interim report, part II. Report No. 342. Baltimore: Center for Social Organization of Schools. (ERIC Document Reproduction Service No. ED 240 421)

Herbst, D.P., & Sontheimer, H.G. (1987). A synergistic model for a juvenile court administered alternative education program. Journal of Offender Counseling, Services and Rehabilitation, 11(2), 67-77.

Kratcoski, P.C., & Kratcoski, L.D. (1982). The Phoenix program: An educational alternative school for delinquent youths. Juvenile and Family Court Journal, 33(2), 17-23.

Lawrence, C., Litynsky, M., & D'Lugoff, B. (1982). A day school intervention for truant and delinquent youth. In D.J. Safer (Ed.) School programs for disruptive youth (pp.177-192). Baltimore: University Park Press.

Mann, D.W., & Gold, M. (1980). Alternative schools for disruptive secondary students: Testing a theory of school processes, students' responses, and outcome behaviors. Final report. Ann Arbor, MI: Institute for Social Research.

Nenortas, G.V. (1987). A drop out prevention program utilizing peer group counseling with middle alternative school students. (ERIC Document Reproduction Service No. ED 289 118)

Reilly, D.H., Reilly, J.L., & West, E.L. (1982). An alternative learning school: student results and system considerations. Journal of Instructional Psychology, 9(3), 122-132.

Reiser, R., & Friedman, M.S. (1978). Radical misfits? How students from an alternative junior high school adapted to a conventional high school. Educational Theory, 28(1), 75-81.

Shaw, C.N., Tomcala, M.J., Middleton, J., Rudee, B., Jones, E., & Smith, J. (1975). A comparative study of students in alternative and traditional high schools. Education, 96(1), 28-35.

Strathe, M., & Hash, V. (1979). The effect of an alternative school on adolescent self-esteem. Adolescence, 14(53), 185-189.

Swanson, L.A., & Williams-Robertson, L. (1990). School-community guidance center: An alternative education program for high risk students, 1989-1990. Austin: Texas Office of Research and Evaluation.

Tallmadge, G.K., & Lam, T. (1979). Study of the career intern program: Interim technical report - task B: Assessment of interim outcomes. Mountain View, CA: National Institute of Education.

Trickett, E.J., McConahay, J.B., Phillips, D., & Ginter, M.A. (1985). Natural experiments and the education context: The environment and effects of an alternative inner-city public school on adolescents. American Journal of Community Psychology, 13(6), 617-643.

Walizer, M.H., Erickson, E.L., Bournazos, K., & Sonnad, S.R. (1975). Madison park alternative education program: Sweet street academy. Kalamazoo, MI: Grand Rapids Public Schools.

Walizer, M.H., Erickson, E.L., Bournazos, K., & Sonnad, S.R. (1975). Final evaluation report. The walbridge academy. Information Services, Inc.: Grand Rapids Public Schools.

Weber, M.B., (1976). Alternative education: Implications for evaluation methodology. Paper presented at the Annual Meetings of the American Educational Research Association, San Francisco, CA, April 19-23, 1976.

Willman, M.L. (1989). A case for alternative schools: A look at student achievement in self-paced programs. (ERIC Document Reproduction Service No. ED 311 504)

Wootten, M., Matthews, T., & Fong, S. (1982). Case studies of selected alternative schools. Seattle: Washington Department of Planning, Research, and Evaluation.