Education as Prison Reform: a Meta -Analysis.

Ronald Edward Wells
Louisiana State University and Agricultural & Mechanical College

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_disstheses

Recommended Citation

This Dissertation is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Historical Dissertations and Theses by an authorized administrator of LSU Digital Commons. For more information, please contact gradetd@lsu.edu.
INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

Bell & Howell Information and Learning
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
800-521-0600

UMI®

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
EDUCATION AS PRISON REFORM: A META-ANALYSIS

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy in The Department of Educational Leadership, Research, and Counseling

by

Ronald E. Wells
B.S., Louisiana State University, 1997
M.S., Louisiana State University, 1998
August, 2000

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
ACKNOWLEDGMENTS

The author is aware that more than customary indebtedness has accumulated from the inception of this investigation until the present. Many have willingly assisted me in some phase of this investigation and deserve far more than a simple "thank you" for their able assistance. To mention only a few of those who have shared in this endeavor but not everyone would be an oversight; however, to mention no one would be an act of ingratitude. The latter, it seems, would be unforgivable.

The author is especially indebted to Dr. William Davis, who in serving as this author's major professor provided encouragement, constructive advice, and criticism in guiding the preparation of this dissertation. Further gratitude is expressed to Dr. Thomas Durant for his encouragement, guidance, and energy in giving initial direction to this project. It was because of Dr. Durant that I chose the study of criminals and education.

Appreciation is due Professors Richard Fossey, Barry Daste, and Becky Ropers-Huilman for their support, insight, and service on my examining committee. Dr. Richard Fossey never seems too busy to talk to students, share his knowledge, or provide constructive support and criticism. Dr. Barry Daste provides a breath of qualitative fresh air in a sea of quantitative anxiety. Thanks are due to all for
making my graduate studies a rewarding and memorable experience.

I have been especially blessed with a supportive cohort, to them I am forever indebted for their kindness, understanding, and patients. To Terry Estas, and Carla Levins I hope that one day soon I can repay the love and support you have given me.

Sincere thanks are extended to the superintendents, Wardens, and the many inmates I have spoken with throughout this project. A special thanks is extended to Ruth Paschal, of the Florida Department of Corrections, for her support and guidance in this project.

Finally, I would like to thank my wife, Kimberly Manina, for her love, kindness, and support during this project.
TABLE OF CONTENTS

ACKNOWLEDGMENTS ............................................................. ii
LIST OF TABLES ....................................................................... vii
LIST OF FIGURES .................................................................... x
ABSTRACT ............................................................................... xi

CHAPTER I. INTRODUCTION .................................................. 1
Statement of Problem .......................................................... 4
Purpose of the Study ............................................................ 10
Intervening Factors ............................................................... 11
Objectives of the Study ......................................................... 14
Propositions ........................................................................ 15
Significance of the Study ....................................................... 18
Assumptions and Limitations of the Study ............................. 19
Summary ........................................................................... 20

CHAPTER II. THEORETICAL FOUNDATIONS ......................... 23
Education ............................................................................ 28
Control Theory .................................................................... 29
Differential Association Theory ........................................... 33
Theoretical Summary ........................................................... 35
Expected Relationships ......................................................... 41

CHAPTER III. REVIEW OF THE LITERATURE ....................... 44
Crime ................................................................................ 44
Corrections .......................................................................... 47
Recidivism ........................................................................... 50
Income, Employment, and Recidivism ................................. 51
Self-identity, Cognitive-development and Recidivism ............ 54
Education ........................................................................... 58
Corrections Education .......................................................... 59
History of Correctional Education ......................................... 60
Corrections Education Today ................................................. 65
Education Programs and Characteristics ............................. 68
Identification of Barriers to Correctional Education ................ 71
Correctional Educational Programs, Enrollment, and Administration ................................................................. 75
Meta-Analysis ..................................................................... 77

CHAPTER IV. METHODOLOGY ............................................. 87
Rational for Study Methodology ............................................ 88
Research Questions and Hypothesis ..................................... 88
<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meta-Analysis Methodology</td>
<td>91</td>
</tr>
<tr>
<td>Effect Size Estimates</td>
<td>92</td>
</tr>
<tr>
<td>Converting Study Statistics to Effect Size</td>
<td>95</td>
</tr>
<tr>
<td>The Research Design</td>
<td>97</td>
</tr>
<tr>
<td>Selection of Studies and Controls</td>
<td>98</td>
</tr>
<tr>
<td>Study Sample</td>
<td>99</td>
</tr>
<tr>
<td>Data Collections and Coding Procedures</td>
<td>101</td>
</tr>
<tr>
<td>Coding Procedures</td>
<td>101</td>
</tr>
<tr>
<td>Analysis of the Data</td>
<td>103</td>
</tr>
<tr>
<td>Logistic Regression</td>
<td>106</td>
</tr>
<tr>
<td>ANOVA</td>
<td>108</td>
</tr>
</tbody>
</table>

**CHAPTER V. Data Analysis** | 109 |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive Statistics</td>
<td>109</td>
</tr>
<tr>
<td>Bivariate Correlations</td>
<td>124</td>
</tr>
<tr>
<td>Program Correlations</td>
<td>125</td>
</tr>
<tr>
<td>Institutional Correlations</td>
<td>126</td>
</tr>
<tr>
<td>Individual Correlations</td>
<td>127</td>
</tr>
<tr>
<td>Methods Correlations</td>
<td>129</td>
</tr>
<tr>
<td>Meta-Analysis and Study Effects</td>
<td>129</td>
</tr>
<tr>
<td>Logistic Regression Analysis</td>
<td>133</td>
</tr>
<tr>
<td>Model 1: Recidivism on Education</td>
<td>135</td>
</tr>
<tr>
<td>Model 2: Recidivism on Program Variables</td>
<td>137</td>
</tr>
<tr>
<td>OLS Regression Analysis</td>
<td>142</td>
</tr>
<tr>
<td>Intra-Group Comparisons and Analysis of Variance</td>
<td>145</td>
</tr>
<tr>
<td>Institutional Variations</td>
<td>147</td>
</tr>
<tr>
<td>Individual Variations</td>
<td>151</td>
</tr>
<tr>
<td>Program Variations</td>
<td>157</td>
</tr>
<tr>
<td>Methodology Variations</td>
<td>170</td>
</tr>
<tr>
<td>Summary</td>
<td>174</td>
</tr>
<tr>
<td>Hypotheses Review and Testing</td>
<td>176</td>
</tr>
</tbody>
</table>

**CHAPTER VI. Discussion, Conclusions, and Summary** | 182 |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview of the Study</td>
<td>182</td>
</tr>
<tr>
<td>Recidivism Predictions</td>
<td>185</td>
</tr>
<tr>
<td>Meta-Analytic Synopsis</td>
<td>189</td>
</tr>
<tr>
<td>Theoretical Connection</td>
<td>193</td>
</tr>
<tr>
<td>Comparison of Current Models</td>
<td>194</td>
</tr>
<tr>
<td>Social Control Theory</td>
<td>198</td>
</tr>
<tr>
<td>Differential Association</td>
<td>199</td>
</tr>
<tr>
<td>Age</td>
<td>202</td>
</tr>
<tr>
<td>Risk, Need, and Responsivity</td>
<td>203</td>
</tr>
<tr>
<td>Education</td>
<td>206</td>
</tr>
<tr>
<td>Theoretical Implications</td>
<td>209</td>
</tr>
<tr>
<td>Policy Implications</td>
<td>211</td>
</tr>
<tr>
<td>Final Synopsis and Implications</td>
<td>214</td>
</tr>
<tr>
<td>Application of the Findings</td>
<td>217</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Descriptive Statistics For Continuous Variables</td>
<td>110</td>
</tr>
<tr>
<td>2.</td>
<td>Descriptive Statistics for Discrete Orderable Variables</td>
<td>112</td>
</tr>
<tr>
<td>3-A.</td>
<td>Descriptive Statistics for Discrete Non-Orderable Variables</td>
<td>114</td>
</tr>
<tr>
<td>3-B.</td>
<td>Descriptive Statistics for Discrete Non-Orderable Variables</td>
<td>116</td>
</tr>
<tr>
<td>3-C.</td>
<td>Descriptive Statistics for Discrete Non-Orderable Variables</td>
<td>118</td>
</tr>
<tr>
<td>4-A.</td>
<td>Descriptive Statistics for Dichotomous Variables</td>
<td>121</td>
</tr>
<tr>
<td>4-B.</td>
<td>Descriptive Statistics for Dichotomous Variables</td>
<td>123</td>
</tr>
<tr>
<td>5.</td>
<td>Main Variable Correlations</td>
<td>126</td>
</tr>
<tr>
<td>6.</td>
<td>Meta-Analysis Study Statistics</td>
<td>130</td>
</tr>
<tr>
<td>7.</td>
<td>Univariate Analysis of the Effect of the Independent Variables on Recidivism</td>
<td>135</td>
</tr>
<tr>
<td>8.</td>
<td>Education Prediction Accuracy</td>
<td>136</td>
</tr>
<tr>
<td>8-A.</td>
<td>Education Prediction Accuracy</td>
<td>138</td>
</tr>
<tr>
<td>9.</td>
<td>ANOVA Completers, Non-Completers, and Control</td>
<td>139</td>
</tr>
<tr>
<td>10.</td>
<td>Logistic Regression Analysis of the Effect of Program Variables on Recidivism</td>
<td>140</td>
</tr>
<tr>
<td>11.</td>
<td>Model Summary Stepwise Regression</td>
<td>143</td>
</tr>
<tr>
<td>12.</td>
<td>ANOVA: Model Summary Stepwise Regression</td>
<td>144</td>
</tr>
</tbody>
</table>

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
Table 13. Significance Test Model Comparison ...............145
14. Institution Type Mean Variations ..............148
15. ANOVA Institutional Type Variations ...........148
16. Population Type Mean Variations ..............149
17. ANOVA Population Type Variations ..........150
18. ANOVA U.S. Location Variations ..............151
19. Race Mean Variations ..........................152
20. ANOVA Race Variations .......................152
21. Gender Mean Variations ......................153
22. ANOVA Gender Variations ....................153
23. Age Mean Variations ..........................155
24. ANOVA Age Grouping Variations ..............156
25. Course Completion Mean Variations ..........158
26. ANOVA Course Completion Variations ..........158
27. Course Completion Subgroup Mean Variations ..159
28. ANOVA Course Completion Subgroup Variations ..160
29. Program Type Mean Variations ...............162
30. ANOVA Program Type Variations ...............162
31. Program Type by Gender Mean Variations ......164
32. ANOVA Program Type Gender Variations ......164
33. Program Type by Race Mean Variations ........166
34. ANOVA Program Type Race Variations ..........167
35. Program Variable Mean Variations .............169
<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>36. ANOVA Program Variable Variations</td>
<td>171</td>
</tr>
<tr>
<td>37. Method Strength Mean Variations</td>
<td>173</td>
</tr>
<tr>
<td>38. ANOVA Method Strength Variations</td>
<td>173</td>
</tr>
</tbody>
</table>
LIST OF Figures

Figure

1. Effect Size v. Recidivism Reduction ..........133
2. Age Grouping Mean Differential ...............156
3. Box Plot - Completion & v. Effect Size ........161
4. Box Plot - Method Strength v. Effect Size ....174
ABSTRACT

Corrections administrators have long recognized the possibility of education as a method of creating a favorable change in incarcerated individuals. Through education the individual would be encouraged in his/her attempts to succeed within society. However, this feeling has been more of an intuitive notion rather than empirically determined.

The goal of this dissertation has been the development of a model of recidivism prediction which could overcome the problems of subjectivity, inaccuracy, and invalidity found in many currently used methods of prediction. This investigation was designed to explore relationships between several educational variables and post-release behavior of criminal offenders. The results of this research support and confirm the positive relationship between education and recidivism.

The elements of the social bond and differential association have proved in the past to be important predictors of future criminal activity. As indicators of recidivism, these two theoretical perspectives provide the foundation for a new model in correction reform. At the beginning of this investigation it was anticipated that the addition of education, income, and a measurement of the social bond, grounded in criminological theory (elements of
the social bond and differential association), would significantly add to the predictive ability of recidivism.

The approach used in this dissertation has been to develop the problem and then to apply appropriate educational and criminological theories and perspectives to solve the problem. Using meta-analysis as a method of mining the knowledge produced by numerous studies in the area of corrections education, the goal has been to utilize the additive power of these studies and the various approaches to solve a critical social problem rather than to develop a new social theory.

The findings from this study suggest that criminologically grounded variables such as, education, income, and the social bond, previously applied to predict criminality can be successfully utilized to predict, and then ultimately prevent, continuation of an already existing criminal career. The end result can be applied to policy development that will aid in a reduction of prison populations.
CHAPTER I
INTRODUCTION

"We must accept the reality that to confine offenders behind walls without trying to change them is an expensive folly with short-term benefits -- winning battles while losing the war." Former U.S. Supreme Court Chief Justice Warren Burger (Taylor, 1993, p. 90)

In response to the American public's growing fear of crime and the call for more punitive measures to combat criminals, many legislators and policy makers have promoted building more prisons, enacting harsher sentencing legislation, and eliminating various programs inside prisons and jails. With national recidivism rates averaging 65%, it is clear that incarceration alone is not working. In fact, the drive to incarcerate, punish, and limit the activities of prisoners has often resulted in the elimination of strategies and programs that seek to prevent or reduce crime (Akers, 1984; Arbuthnot & Faust, 1981; Bettendorf, 1996).

While many forms of deviance might seem to have prospered in the past few decades, it is increasingly obvious that public toleration for criminal activity has plummeted. The combination of economic crisis, political cynicism, and a pervasive moral malaise has manifested itself across North America in the form of frustration and anger at crime; criminals, especially prisoners, have become the target of choice. They are a convenient symbol.
of excessive government spending on what are perceived as frills; they epitomize public frustration with the failure of the reformational promises of the new social sciences; and they are a visible reminder of an apparent moral breakdown in our culture.

Currently over 1.6 million individuals are housed in adult correctional facilities in the United States (Gillard and Beck, 1997) and at least 99,682 juveniles are in custody (DeComo et al., 1995). The majority of these individuals will be released into the community unskilled, undereducated, and highly likely to become re-involved in criminal activity. With so many ex-offenders returning to prison, it is clear that the punitive, incarceration-based approach to crime prevention is not working.

Correctional rehabilitation for adult offenders has been the focus of considerable attention, mostly negative, since 1973: set off by a "nothing works" philosophy spurred by Martinson's scathing report (1974). In the early part of the nineteen sixties there was a flurry of efforts to develop and implement major social programs for adult offenders, a time when the philosophy of rehabilitation was gaining acceptance and embodied strong advocates.

After the seventies, fueled by a sizable collection of books and articles that concluded that as far as correctional treatment is concerned, nothing works, or, at
best, not much works, the pendulum swung away from rehabilitation toward deterrence and incapacitation (Bailey, 1966; Greenberg, 1975; Lipton, Martinson, & Wilks, 1975; Martinson, 1974; Robison & Smith, 1971; Sechrest, White, & Brown, 1979; Wheeler, 1969). This occurred at the same time prison populations were expanding, prisons were overcrowded, budgetary cutbacks were rampant, and the public was calling for punishment.

Between 1950 and 1970, interest in and attention to correctional education was a major part of correctional reform. The drive was theoretical and applied; it was from the perspective of both planning and implementing programs. In the waning years of the 1970s, the interest in correctional education was from the standpoint of questioning the worth of educational programs as part of the rehabilitation process.

As the 20th century drew to a close, once again correctional education is gaining some support and interest. Former Chief Justice Warren Burger continues to stand as a staunch ally for correctional education, as indicated by his statement that: "We must accept the reality that to confine offenders behind walls without trying to change them is an expensive folly with short term benefits -- a winning of battles while losing the war" (Taylor, 1993, p. 90).
Statement of the Problem

A major task in all areas of science is the development of theory; in many cases, the theorists have available the results of a number of previous studies on the subject of interest. Their first task is to find out what empirical relationships have been revealed in these studies so they can take them into account in theory construction. However, theory construction alone is not the only goal of scientific research; social science theory must at some point convert to public policy. After Martinson's report that "nothing works" (1974), correctional rehabilitation programs were set back twenty years; however, these have not been the only inconsistencies found in social science research.

In an address presented to the American Psychological Association Convention in 1970, Senator Fritz Mondale addressed the ambiguities of social science research when he stated: (as quoted in Hunter & Schmidt, 1990, p. 35)

What I have not learned [here today] is what we should do about these problems. I had hoped to find research to support or to conclusively oppose my belief that quality integrated education is the most promising approach. But I have found very little conclusive evidence. For every study, statistical or theoretical, that contains a proposed solution or recommendation, there is always another, equally well documented, challenging the assumptions or conclusions of the first. No one seems to agree with anyone else's approach. But more distressing: no one seems to know what works. As a result I must confess, I stand with my colleagues confused and disheartened.
It is apparent that the general public and government officials are becoming increasingly disillusioned with the behavioral and social sciences; and funding is becoming more and more difficult to obtain. It is argued in this dissertation that another empirical research study in correctional education is not needed. However, there is a need to mine the rich untapped veins of empirical data sitting in the accumulated research literature.

Without any of the fanfare associated with his 1974 pronouncement, Martinson renounced his views. First he reaffirmed the virtues of probation as a rehabilitative method (Martinson & Wilks, 1977). Then, two years later, he declared that under various conditions there were many examples of successful rehabilitation efforts ... "such startling results are found again and again ... for treatment programs as diverse as individual psychotherapy, group counseling, intensive supervision, and what we have called individual help" (1979, p. 255). Martinson's research covered both ends of the spectrum. Where his 1974 report is the most frequently cited and quoted, but also the most damaging and misunderstood, his retraction articles in 1977 and 1979, are probably the most infrequently read articles and least helpful in the debate on rehabilitation. From Martinson we can learn that once
social reform is set into motion it takes a significant amount of effort to change course again.

Today education programs in prisons must compete for an ever-shrinking corrections budget as government funds are cut back, diverted to more politically popular areas or siphoned off for prison construction.

It is crucial, therefore, that the education of prisoners be justified in terms of effectiveness - by demonstrating that "it works". And in this more punitive and short-tempered age "working" ultimately - and in some cases immediately - means reducing the rate of return to prison for new offenses.

But this can be a dangerous route to follow. For instance, there is widespread academic skepticism that one can draw any meaningful linkage between the experience of a program in prison and subsequent behavior after release (Brunner, 1993; Chandler, 1973; Elikann, 1996). There are repeated warnings against attempting to establish blanket connections between education and recidivism. Sylvia McCollum warns against trying to measure the effectiveness of a particular prison program in terms of recidivism and says that it is "an expensive exercise in futility" (1977, p.32). Lawrence Ries, the coordinator of Skidmore University's Great Meadows Program insists that: "College
programs are in the prisons to educate, not to reduce recidivism" (1981, p. A-17). William McCarthy warns that:

Education in the prison context should not be viewed as a process undertaken for the purpose of lowering recidivism. Although higher academic achievement may correlate with a lower crime or recidivism rate, this does not provide adequate proof of a direct causal link. The possible influences of innumerable and intervening variables make such a contention pretentious (1985, p.216).

Finally, there is the frightening experience that corrections went through following Martinson’s (1974) observation that in fact “nothing worked” - a classic case of promising too much and being found out.

The need for prison reform clearly outweighs the danger of political whiplash and correctional administrators, researchers and educators across North America are busy compiling data on the post-release lives of prisoners. The procedures are varied, the definitions of student, education, and recidivism wildly divergent, and the quality mixed. Overall, the studies tend to show that prisoners who complete some kind of education programming while in prison do somewhat better after release than those who do not (Anderson, Schumacker, & Anderson, 1991; Berk, Lenihan, & Rossi, 1980; Chandler, 1973; Downing, Stitt, & Murray, 1987 ). This is encouraging, but it does not really tell us very much about why this happens, who it happens to, or how the effect might be improved upon.
Politically then, prison education will need to be responsive to the calls for accountability, and that will most likely mean demonstrating effectiveness along with the more standard measures of efficiency and quality.

Effectiveness in this endeavor can really only mean enhancing the protection of society, and since most prisoners are eventually released into society, that means having an impact on the way they choose to lead their lives. The question we are faced with then is not should we demonstrate effectiveness by examining the post-release lives of prisoners, but rather, can we do so? Is there a research path or methodology that can be utilized which is more effective at reviewing the connection between correction education and recidivism? Are the means and techniques for putting that methodology into practice available?

It appears that the time has come for a paradigm shift in correctional program evaluation; a shift from evaluation of the program and structure to an evaluation of the individual within the structure and program. Therefore, this research project shall begin with the question: What is the connection between the individual inmate's educational experience in prison and his/her behavior after release?
The problem addressed in this study is the development of a rehabilitation model for positive post-release outcome - a reduction in recidivism rates. The suggested model enhances existing models and studies through the use of meta-Analysis as a method of selecting variables that are grounded in control theory and differential association theory. The literature to be addressed in this dissertation indicates that there are two general problems with current rehabilitation models for addressing post-release outcome. First, current prediction methods address programs as independent variables and not as intervening independent variables (Gottfredson, 1979). Second, many of the measurements and variables used in predicting recidivism are structurally objective, not participant objective; they look only at program outcomes and not program participants (Gendreau and Ross, 1987).

The problems with the current approach can be categorized into four specific areas:

1) The current methods are not accurate in their predictive ability.

2) They explain very little of the variance in post-release outcome.

3) They often make use of subjective information which can be objectively quantified.

4) They fail in their mission to protect the public and provide equality to offenders.
It is hypothesized that the addition of selected variables - education, social bond, income - will add a significant amount of strength to the objective prediction of post-release outcome. At the same time, this addition will replace some of the more subjective criteria used by prison educators, administrators, and parole boards such as race, age, gender, and type of offense. The general question to be addressed in this study is: To what degree does the inclusion of education, social bond, and income, significantly increase the predicative power in a model of post-release outcome (recidivism)?

Purpose of the Study

Enhancing community safety is a major goal of corrections. One way of attaining this goal is by adopting strategies which reduce offender recidivism. In the 1970s and 1980s there was widespread disillusionment with the effectiveness of treatment programs to reduce recidivism.


According to researchers, such as Roush (1993) and Corcoran (1985), there is a considerable need for improvement in correctional rehabilitation and in reducing
recidivism. Lack of societal support, lack of collaboration between correctional and political leaders, poor resources and inadequate planning are only a few of the many problems confronting correctional rehabilitation.

The costs of recidivism are extremely high in terms of new crimes committed, the expense of re-incarceration, and loss of human capital. If research can determine who recidivates, when they recidivate, and why, then we as a society may have a chance of lowering crime and reducing recidivism; society stands to benefit through enormous dollar savings and savings of human resources.

Reagen and Stoughton (1976) wrote:

Correctional education today is a lusty adolescent whose maturation is inevitable. Like the human teenager, however, we don’t quite know what it is about and where it is headed. The challenge is to define it, nurture and organize it, and give it direction and purpose (p.112).

**Intervening Factors**

The initial research for this dissertation concluded that a major contributing factor to the soaring rate of crime and recidivism was the inability of former convicted offenders to get their lives restarted (Blumstein, Cohen, & Farrington, 1988; Chiricos, 1987). Most offenders have an average fifth-grade reading level (Brunner, 1993; Corcoran, 1985), and nearly a third of them are illiterate (Corcoran, 1985; Davidson, 1995; Horvath, 1982). In
addition to addictions remaining untreated, many former offenders upon release cannot find gainful employment and cannot reestablish a functional family environment (Crutchfield, 1989; Duster, 1987; Friedman, 1978; Glaser & Rice, 1959). Almost inevitably they became dependent on welfare systems, relapse into substance abuse, and then return to criminal activities; old patterns are easily reestablished.

There have been numerous reviews of educational programs in the United States. However, in a review of the literature on prison education programs, Linden and Perry (1992) found relatively few national level evaluative studies on correction education. The last comprehensive survey of correctional education was made in 1987 (Conrad, Bell, and Laffey, 1988). An earlier national study (Dell'Apa, 1973) reviewed many of the same variables reexamined in the 1987 survey. There is a need for a more in-depth scientific evaluation of correctional education programs in light of the changes that have taken place in the last two decades.

Factors that may have influenced correctional education include court intervention in corrections, budgetary cutbacks, diminishing resources, prison overcrowding, and the change from a philosophy of rehabilitation to one of deterrence and incapacitation. The
extent to which these factors have compounded to affect correctional education are not fully known.

Education per se has never been a perfect process in any society. It has been replete with unsolved problems since the beginning of recorded history. A sociology for studying the educational milieu appeared on the academic scene when there was a need not met entirely by existing social institutions (Robins, 1953). However, the challenge for overcoming some of these problems still exists since the sheer complexity of our society today has helped to make the analysis increasingly confused and confusing.

One can become easily accustomed to the idea that education is something involving only the local school system. More fashionable, the news media has placed great stress upon the importance of an education to "get a good job" in our society. Even though there is some merit to these suggestions, this particular emphasis has had as one of its less wholesome results preoccupation with a formal structure that, in its more extreme phases, has tended to regard the culture itself as incidental to the system.

There is an increasing need today for educators, sociologists, and criminal justice administrators to realize the power of education to create something new, and not merely perpetuate something old. For example, if the criminal offender is to profit from his/her educational
experience, that experience must reflect an imaginative use of education as creation rather than indoctrination. This challenge has been vividly described by Warden (1968):

Our rapidly developing, complex, urbanized, industrial society requires that every functioning member be literate, responsive to changes in every aspect of life and work, and capable of learning and relearning relatively complex skills and ideas as minimal prerequisites for economic security, social responsibility and mature independence. The public schools must bear the major burden of training children to be functioning members of such a society. The public schools, therefore, cannot be selective, but must be particularly concerned with the life and career potentials of those youngsters who are adversely affected by the present school program and social climate. The contemporary focus of the educational system must emphasize raising both the aspiration and the achievement levels of the group of children who have been ignored, rejected, or placed in a marginal position relative to their more advantaged classmates. (p.13).

Objectives of the Study

There is at present a cancer eating at the heart of our nation. Whether we can cure it or not only the future will tell. It is not a problem of segregation or desegregation, of employment or unemployment, or of race relations; it is not even a question of human justice, although it involves all these problems. It is the problem of our own underdeveloped people. We called them "disadvantaged Americans" (Russell, 1965, p.35).

There has been a growing awareness that American schools have not provided the quality of education needed by many citizens. Especially within the last decade, reforms have been initiated in many sections of the country and at all educational levels. The increase in both private
and public funds has enabled school systems to launch new remedial programs (Astone & McLanahan, 1991; Chapman & Walberg, 1992).

The objectives of this dissertation derive their inspiration from some of the exciting developments in the fields of educational and sociological research which have transpired in the past few years. One does not have to search for an appropriate incentive to warrant a study of the "disadvantaged citizen" in our society; however, considerable motivation for conducting this particular research endeavor can be traced in part to a personal increasing awareness of the special challenges which confront the disadvantaged citizens of America.

This dissertation began as part of a continuing personal endeavor aimed at the improvement of our society. The general goal of this larger body of personal research was to determine the effectiveness of education in combating poverty, social inequality, racism, and crime.

Propositions

In order to gain information that would be suitable for a dissertation, meet the needs of society, and fulfill personal goals, the focus needed to be narrowed. In that regard objectives are put forth that attempt to delineate and measure specific factors and variables operative in American society which might contribute to a reduction in
crime, but, specifically, a reduction in repeat criminal behavior (recidivism). Specific propositions for this study are stated as follows:

**Proposition I:** To determine what variables in the social bond or the environment of the offender might be related to his/her behavior as measured by post release convictions.

*Corollary A:* To identify and/or measure select biographical variables (age, sex, race, type of social bonds, number of conventional others, and type of institution) associated with the individual to determine how these variables relate to deviant behavior of the offender.

*Corollary B:* To determine how the offender's evaluation of the environment and social bonds might affect their attitude toward deviant behavior and thereby cultivate this behavior.

*Corollary C:* To determine what structural factors associated with the environment (pre-arrest and prison) negatively impact and therefore promote criminal behavior.

**Proposition II:** To determine what variables in either the person or the environment of the offender might be related to educational achievement.

*Corollary A:* To identify and/or measure select biographical variables (age, sex, race, type of social bonds, number of conventional others) associated with the individual to determine how these variables have related to educational achievement of the offender.

*Corollary B:* To determine how the offender's evaluation of the environment and social bond might affect his/her attitude toward education and thereby propagate high or low educational achievement.
Corollary C: To determine what structural factors associated with the environment (pre-arrest and prison) negatively impact education and therefore promote low educational achievement.

Proposition III: To determine what variables in either the person or the environment of the offender might be related to the income history of the offender.

Corollary A: To identify and/or measure select biographical variables (age, sex, race, social bonds, number of conventional others, and type of institution) associated with the individual to determine how these variables are related to the income history of the offender.

Corollary B: To determine how the offender's evaluation of the environment and social bond might affect his/her attitude toward income and therefore promote deviant behavior.

Corollary C: To determine what structural factors associated with the environment (pre-arrest and prison) negatively impact the individual's ability to provide sufficient income and therefore promote criminal behavior.

The findings of this dissertation as outlined above should provide important insights on these stated objectives, even though conclusive positions on some of them may not be possible. The information obtained from this meta-analysis should be of special interest to a number of interrelated specialties in the fields of education, sociology, and corrections.
**Significance of the Study**

The practical significance of this study is recognized. No attempt has been made to play this down; this investigation was instigated from interest in finding and affecting solutions to current social problems in the fields of education, sociology, and corrections.

The crucial importance of demonstrating the value of prison education by linking it to reduced levels of recidivism has been a repeated research argument for the past three decades. In a discussion concerning corrections education (Reagen & Stoughton, 1976) the Assistant Director of the Federal Bureau of Prisons asserted that "research indicates that we are doing it" (p.4); the Director of the California Department of corrections warned that "we have to do it on data, not on stories ... and there's not enough good data" (p.4); and the Sheriff of San Francisco argued passionately that "we need to prove it" (p.4). There is a lot of pressure put on such a small word as "it" and such a vague notion as "working" - words that by themselves cannot carry the weight.

This dissertation supports a more complex research approach to the theme of education and recidivism and outlines a research methodology designed to move from attempting to demonstrate simply that "it works" - an enterprise fraught with danger - toward discovering what
works, who it works for, when it works, and under what circumstances it works. It is important to stress, however, that this investigation is concerned with exploring a research methodology with an eye to its broad application in the field of prison education research, not with an assessment of the effectiveness of a particular program.

No recommendations for policy action are being made in this phase of the research endeavor. However, this author is cognizant of the practical implications of such information, and it is believed that knowledge gained from this investigation will provide the necessary guidelines for the establishment of effective educational programs.

Assumptions and Limitations of the Study

This investigation/meta-analysis examines correctional education research studies and not the total literature on correctional rehabilitation. In addition this dissertation is based on previously reported studies; thus the implementations and effectiveness of correctional education programs is limited to the features reported in those studies.

Meta-analyses are not free of criticism. Wolf (1986) notes that critics of the method tend to focus on two potential problems. First, journal editors tend to be biased in favor of statistically significant findings, which may limit the use of meta-analyses because they are
generally conducted on evaluation studies that have been published as opposed to those that are unpublished. This is not a problem in the present analysis, because studies indicating positive and negative results in correction education programs are found in the published literature. Still, to compensate for any potential publisher bias, this analysis also includes a number of unpublished official reports as well as dissertations.

The second potential problem, which tends to be more serious, is that well-done studies are included with poor studies. This may bias the overall effect size estimates of the analysis (Cohen, 1977).

Minimizing this problem requires: (1) establishing theoretically relevant criteria for inclusion in the sample and (2) coding of methodological variations that could influence the independent study’s effect size estimate, in this case, program and institutional characteristics (Glass, McGaw, and Smith, 1981). Both of these have been accomplished for this meta-analysis.

Summary

Lester Ward, an acclaimed scholar in American sociology, had faith in education as a cure for all of society's evils; this belief has a long heritage which is still reflected in American public school systems which, as Barzun (1954) describes it, is expected to do everything
that the rest of society has left undone. The concept of
the progressive role of the school in society - a concept
formulated by Ward (1883) - was later accepted by Dewey as
the basic principle of his educational philosophy.

The thinking of Ward is indicative of the direction in
which the field of education has been growing in this
country. His views left a birthmark that was to identify
the field for years to come. He asserted: "Education is the
mainspring of all progress. It is the piston of
civilization" (Ward, 1883, p.589).

The fundamental and increasing importance of the
educational process in the system of corrections makes it
of such importance that sociologists and educators should
turn their attention and abilities to an analysis of this
aspect of our society. Improvements in the American penal
system can move forward much more rapidly if based upon a
scientific analysis of its correctional programs. Needless
to say, an improvement in this area will help to alleviate
part of the distress encountered by disadvantaged citizens
in American penal institutions.

It is within this context that this meta-analysis of
adult correctional education programs is undertaken. It is
the intention of this author that the results of this
analysis will reveal not only the level of support for, and
participation in, adult correctional education at the turn
of the new millennium, but also the extent and nature of changes in adult correctional education over the last three decades. It is assumed that this information is of value to administrators, politicians, and society in planning and implementing correctional programs for the future.
CHAPTER XI
THEORETICAL FOUNDATIONS

A social concept that will aid in the parsimonious selection of the variables of concern here is that of "criminal career". This concept refers to the lifetime sequence of offenses committed by an offender who has a measurable rate of offending during some period. The criminal career is characterized during a life cycle by three phases: the onset or initiation; the duration; and the termination (Blumstein, Choen, & Farrington, 1988). For those researchers studying rehabilitation and recidivism, the period of greatest interest occurs at the termination of the career. The focus of interest is in learning about features such as what caused the termination, who terminated, and any definable trends in termination or reduction. At least intuitively, these same concerns have influenced the construction of many of the current models of recidivism prediction.

The criminal careers approach is not a true theory of crime; it is not focused on specifying the various causes of crime. However, the criminal career approach is a perspective which allows for the possibility that different causal factors and processes may be at work at different times in the offenders' life cycles. As suggested by Blumstein and Cohen (1987), within the criminal career model, different theoretical approaches may be tested to
understand which factors may work to encourage, to intensify, to terminate, or at least inhibit criminal activity.

There are three closely related perspectives that are part of the concept of the career criminal and may provide some guidance toward the development of indicators of future criminal activity. These perspectives are the generality of deviance (Osgood, Johnston, O'Malley, & Bachman, 1988), the career criminal (Barnet, Blumstein, & Farrington, 1989; Blumstein & Cohen, 1987; Blumstein, Cohen, Roth, & Visher, 1986), and the latent trait (Rowe, Osgood, & Nicewander, 1990).

If future criminal involvement can be predicted based on past behavior (a criminal careers approach), then it is reasonable to assume that a reduction in recidivism could be obtained based on the inverse of those same variables, along with the addition of latent trait variables, as suggested by Row, et al. (1990). The latent trait evaluation is one that is often overlooked by corrections and rehabilitation researchers. If the latent variables are evaluated at all, it is done using subjective rather than objective criteria. It is the effects of the latent traits of human capital, rational choice, properties of the social bond, and associations that are explored in this dissertation.
Although Blumstein was more concerned with predicting criminal careers in general than with the narrower field of reducing recidivism, his approach is applicable. Blumstein proposes that a wider range of information should be used in determining who should be incarcerated or, in this case, who will be re-incarcerated. This dissertation argues that a wider range of information needs to be considered when attempting to predict who will recidivate and who will not.

A period of incarceration is seen by those supporting the criminal careers approach as nothing more than a point of reference within a criminal career. Whether or not the behavior of the offender can be changed during the period of incarceration is not related to the question.

However, what the model in this dissertation is attempting to do is address the question of changed behavior during incarceration. In general, it is similar to the works stimulated by Wolfgang, Figlio, and Sellin (1972), which have been to identify that small group of "chronic offenders" who contribute disproportionately to the crime rate. The models to be tested in this study are not designed to identify that small group of chronic criminal offenders, but, rather, attempts to identify a small group of variables that could possibly contribute to a change in deviant behavior.
Deviant behavior may be a unique phenomenon that requires a separate explanation for each action, or it may be a unified phenomenon with a single explanation. The advocates of the concept of generality of deviance support the idea that different types of deviance may have the same underlying causes. Osgood, et al. (1988) advance two general explanations for the correlations among different types of deviant behavior. One suggests that engaging in one form of deviant behavior leads to engaging in other forms. In other words, and more strongly stated, an initial form of deviant behavior may cause later forms of deviant behavior. The other explanation suggests that different forms of deviant behavior are related in that they have the same influences in common. This second explanation promotes the idea that the cause for different types of deviant behavior is the same thing.

Although it has been firmly established that a wide range of deviant behaviors are positively correlated with one another during adolescence and early childhood (Akers, 1984; Donovan & Jessor, 1985), it was Osgood's (1988) contention that the second explanation is just as important. Either of these approaches has implications for recidivism prediction and reduction, the first having been the most predominant in the models used to date. It is the second explanation, that deviant behaviors are related
because they have shared influences that is of more importance for this study. If, as Osgood has posited, self-esteem, social bonds, and income all share in their ability to influence deviant behavior, then, if properly reinforced, they may also aid in the reduction of crime and deviant behavior.

It is these shared influences, explored by Donovan and Jessor (1985), Jessor and Jessor (1977), Osgood, et al. (1988) and Rowe, et al. (1990) and referred to as latent variables, that may be combined into a general latent construct of unconventionality. Further support for this approach is found in Hirschi's (1984) work on the relationship between drug use and delinquency, in which he stated that these forms of deviance are not merely influenced by some of the same factors, but that "they are manifestations of the same thing" (p.51). The importance of these implications for this study must be considered. If different deviant behaviors are manifestations of a single underlying construct, and if causes specific to any particular form of deviance are relatively unimportant, then the ability to identify those variables that may lead to a reversal in criminal behavior is important in the reduction of crime and reduced recidivism.

One of the variables of importance to the criminal career approach is the effect of education upon the
duration, intensity, and termination of criminal activity. If education is important in predicating a criminal career, then it should also be important in predicting the termination of that career.

Education

Although the arguments concerning the relationship of education and the rate of offending are by no means settled, it is relatively clear that education does have an effect on the amount and duration of criminal activity.

Depending on the type of criminal activity, education is generally a good predictor of potential criminal involvement (Cloward & Ohlin, 1960; Ingalls, 1978; Linden, Peery, Ayers, & Parlett, 1980). The proposition that involvement in crime diminishes with education level is one of the oldest and most widely accepted concepts in criminology (Cohen, 1955; Glueck & Glueck, 1950; Merton, 1938; Tannenbaum, 1938).

The use of education as a reduction variable in criminal careers appears inviting, especially in light of recent findings (Anderson, Schumacker, & Anderson, 1991; Berk, Lenihan, & Rossi, 1980; Chandler, 1973; Downing, Stitt, & Murray, 1987). Correctional administrators, researchers and educators across America are busy compiling data on the post-release lives of prisoners. The procedures are varied, the definitions of student, education, and...
recidivism wildly divergent, and the quality mixed. Overall, the studies tend to show that prisoners who complete some kind of education programming while in prison do somewhat better after release than those who do not (Anderson, Schumacker, & Anderson, 1991; Berk, Lenihan, & Rossi, 1980; Chandler, 1973; Downing, Stitt, & Murray, 1987). This is encouraging, but it doesn’t really tell us very much about why this happens, who it happens to, or how the effect might be improved upon.

**Control Theory**

Basic to control theory are the assumptions that, until properly socialized, individuals are inclined to commit deviant acts and are not as inclined to conform; children are more likely to commit deviant acts than adults (Akers, 1984; Cloward & Ohlin, 1960; Cohen, 1955). Every human is constantly evolving as an individual; therefore, socialization as a process does not stop upon attainment of the age of adulthood, but continues throughout life. If the individual is left free to seek his/her own interests, behavior will be driven by personal rather than societal needs (Durkheim, 1950; Hirschi, 1969). The individual acting in this manner is more likely to come into conflict with the rules of society. Thus the distance, as measured by the social bond, at which the individual removes him/her self from society may provide an indication of that
individual's propensity to deviate. If that distance can be reduced through education, then education may provide an avenue for behavior change. The weaker the links with the groups to which an individual belongs, the less he/she will depend on the group. The more the individual depends on himself/herself the less he/she will recognize other rules of conduct; only those founded on their own private interests are important (Durkheim, 1950).

For Hirschi (1969) the social bond consists of four elements: attachment, commitment, involvement, and belief. **Attachment** refers to affective ties toward family, school, community, and friends. **Commitment** refers to an individual's aspirations for, and behavior consistent with attainment of conventional goals such as higher education or training, obtaining a prestigious occupation, and starting a family. **Involvement** is participation in conventional activities which precludes time spent involved in deviant behavior. Finally, **belief** is acceptance of the moral legitimacy of the rules of society.

The premise of control theory is that deviant behavior will occur and continue if there is insufficient attachment to family and community; lack of commitments or involvement in conventional behavior; and inadequate internalization of conventional beliefs. Hirschi predicted that individuals with higher levels of attachment, commitment, involvement,
and belief would be less likely to deviate from the norms of society. The independent effect of each element on deviance is also reinforced by each of the other three elements of the social bond. Hirschi stated that "the more closely a person is tied to conventional society in any of these ways, the more closely he is likely to be tied in other ways" (1969, p.27). It is important to point out that a weak bonded person is free, but not forced or driven to commit deviant acts. Nothing in control theory accounts for motivations to deviate; therefore, it is necessary to include differential association into the theoretical model of this proposed study.

Each of the concepts of control theory have been operationalized in different ways by different researchers, and there are no universally accepted precise meanings for these concepts. Even Hirschi's original theory lacked conceptual clarity (Marcos, Bahr, & Johnson, 1986). Although Hirschi's own descriptions are at times rather vague, there is a general underlying theme involved in the operationalization of the concepts in each of the studies that have attempted to replicate or extend Hirschi's earlier findings.

Despite differences in the way social control theorists explain criminal behavior, they all share one basic thought. Rather than asking the normal criminological
question - "What makes people criminal?" - these theorists share a conviction that deviant behavior is to be expected. What must be explained is "Why do people obey rules?" (Hirschi, 1969, p.10). As a result, some social control theories are reminiscent of a view of human nature that reflects the beliefs of Thomas Hobbes, who was convinced that humans are basically deviant. From this view, human nature or action, is governed by passions, which are in turn classified as aversions and appetites. These passions are the basis of moral judgment and issue in actions whose tendency is self-preservation. In Hobbes' view, human action is governed by the twin passions of fear of death and desire for power (Hobbes, 1651). This view is not particularly crucial for the creation of social control theories, but these theories must at least assume a neutral human nature.

This puts social control theories at odds with some aspects of differential association, particularly in the areas of motivation. It is thus necessary to look at social control theory from the point of view of a socialization theory. Since under-socialized individuals will simply act out their desires, it is the presence of other people and society that necessitates that those behaviors be controlled.
The most important way humans exercise that control is through the process of socialization. As social groups, humans teach the "right" way to do things both informally, as in the family, and formally, as in school. Much of an individual's early upbringing is designed to socialize him/her so that he/she can function in society; social control theories emphasize the quality of this process.

Differential Association Theory

Differential association theory, first developed in the early 1930s by Edwin Sutherland, posits that criminal behavior is like non-criminal behavior; it is learned in a complex process involving behavior patterns either favorable or unfavorable to crime. This process is not one of casual association, but of learning behavior from intimate group associations, primarily family, and close friends. Membership in subcultures, as well as other signs of differential social organization, is used to explain why some individuals come to internalize norms and values (motives) that are in conflict with those of the larger society.

Sutherland's differential association theory has two elements (Sutherland and Cressey, 1979). The first is identified as being the content of what is learned, and the second as being the process by which the learning takes place. The content includes the techniques necessary for
the commission of the crime, such as the appropriate motives, drives, rationalizations, and attitudes as well as the more general definitions favorable to law violation. These are all cognitive in that they are ideas rather than actions.

The second element, process, identifies the means by which the learning takes place. In Sutherland's form of association, learning is not acquired indiscriminately, but through association with significant others or in intimate personal groups (Vold & Bernard, 1986).

Sutherland derived his concept of content from Mead's general argument that "human beings act toward things on the basis of the meanings that the things have for them" (Blumer, 1969, p.3). Thus, for Mead (1934, 1938), a cognitive factor such as meaning determines behavior. An external concrete event in an individual's life cycle can mean very different things depending upon social or economic position, employment, race, peers, or family ties. Mead (1934, 1938) argued that individuals derive particular meaning from particular experiences, but then generalize them in such a fashion that they become a set way of looking at the world, events, and things.

For Sutherland, this meant that the key factor in determining whether people violate the law was not the social or psychological conditions they experienced, but
the way the conditions were defined by the individual (Vold & Bernard, 1986). Thus, it was argued by Sutherland that people will tend to violate laws when definitions favorable to law violation outweigh definitions unfavorable to law violation.

Sutherland's second element, also derived from Mead's theory, concerned the process by which the definitions were learned. In this instance Mead argued that "the meaning of such things is derived from, or arises out of, the social interaction one has with one's fellows" (Blumer, 1969). For Sutherland this meant that the meaning of criminal acts arises primarily from the meanings given those acts by other people, particularly those in intimate personal groups of which the individual is a member. The key characteristics of the association that affected the learning are the frequency of association, the duration, the priority and the intensity. The key then to differential association theory can be found in its focus on the individual's ratio of definitions favorable and unfavorable to crime (MacDonald, 1989).

Theoretical Summary

If criminology should ever achieve any unity, it will be through a concern for a concrete problem rather than through the development of a single theoretical perspective.

(Quinney and Wildeman, 1991, p.18)
Before continuing, it would be of value to summarize the various criminological perspectives used to direct this research study. The purpose of this study is to apply relevant theory in the construction of a model which will reduce recidivism and curtail criminal behavior. However, no general paradigm exists in the disciplines of sociology or education which explains in an integrated fashion all aspects of crime-related phenomena. Indeed, the history of criminology has been characterized as the thorough search of numerous blind alleys. One reason for this lack of theoretical unity has been that criminology incorporates the analysis of different levels of social reality: the origin of criminal definitions (criminalization process); the influence of societal reaction in shaping the reality of crime; and the determinants of behavioral patterns defined as criminal.

The present study is grounded in the latter concern; however, even here, there are several theoretical perspectives which could be relevant. Nevertheless, there is a common thread of theoretical logic which has guided the selection of variables and methods to be investigated in many recidivism studies. At least with respect to sociologically oriented theories, that common thread is the role played by education and the integration of the

36
individual with significant others and conventional institutions.

Sociological reasoning, even as early as Durkheim's study of suicide, has depicted deviance in terms of what could be described as a "valence model" of the relationship between the individual and society. Simply put, this means that deviance (crime) most likely will emerge in the conduct of persons where: 1) the attraction to conventional, institutionalized behavior is low; 2) the attraction to unconventional behavior is high; and 3) the economic advantage in criminal behavior is stronger than conventional behavior.

The explanatory variables - education, income, and social bond - used in this dissertation are selected with the intention of examining this general principle of sociology across a multitude of studies.

Given the goal of this investigation, the most pressing theoretical issue is that of understanding disengagement from patterns of criminal behavior. For the most part, criminological research and explanatory models have emphasized the process by which persons become involved in criminal behavior. It may be for this reason that relatively few theoretical principles have been used to direct the search for predictors of disengagement - an event conceptualized here as exiting from a criminal
career. Nevertheless, any theory which is applicable to answering why people get into crime has relevance with respect to the question of why they get out.

The theoretical perspectives discussed do have some fundamental incongruencies when one applies them to the general problem of "the cause of crime." However, when the concrete problem of disengagement is focused upon, there are some common explanatory themes embodied which lead to a set of propositions regarding what variables may lead to disengagement from criminal behavior.

Following control theory (associated with human capital theory), clearly in Hirschi's formulation and in the various empirical applications of the theory, we are led to believe that, to the extent that we can alter by some measure or measures the presence and intensity of the social bond, we may alter future deviant conduct. The presence of relational bonds form "side-bets" (Becker, 1964) or "stakes in conformity" (Toby, 1957) which increase the potential costs (material and non material) of deviance and thus reduce its likelihood. The absence of the bonding factors, or a lowering of their intensity, implies that social actors are free to engage in deviance and that the attracting factors, whatever they may be, will have greater relative influence in the pull toward deviance.
Though it is a more processually oriented perspective, the logic of differential association theory is consistent in its emphasis on the attraction to deviance resulting from favorable definitions emerging in interaction with non-conventional others who also hold value orientations favorable to law violation. This is principally a subculture perspective and could be stated as arguing that deviance is most likely to occur or continue where the attachment and attraction to a deviant subculture world view is maintained through interaction with others who share that world view (Bankston, Forsyth, & Floyd, 1981; Lofland, 1966).

In addition, involvement in differential association with those whose definitions (values) that are favorable to norm (law) violation suggests the inverse effect of involvement in the conventional interaction emphasized by control theorists. Moreover, participation in more or less organized deviant lifestyles potentially has the consequence of increasing an actor's dislocation from conventional institutions both normatively - subjectively - and ecologically - physically - (Wallace, 1968). Conceptualized in this manner, control theory and differential association theory are not so inconsistent, but rather are symmetrical perspectives.
A similar logic can also be applied in interpreting the association between education and the criminal career. The concept of career implies a movement or trajectory through time in which there are changes in objective status and subjective interpretations of one's social identity (Goffman, 1961). However, it's not the chronological process of education which is important here, but rather the social and interactional changes which education encompasses which are important in interpreting involvement in crime and disengagement from that involvement (Shover, 1985). The association of education and crime as reflected in the education-crime curve clearly suggests that the likelihood of desistance from criminal behavior increases with education, especially as individuals enter into higher levels, a pattern which appears in all societies.

Though the relationship between education and crime has become almost a truism in criminological literature, the reasons for this strong association have not been extensively researched. However, research has suggested a number of contingencies common to educated offenders which move them toward exiting criminal careers. Generally, these contingencies result in less favorable evaluations of the rewards of criminal involvement relative to the potential costs. Education, as a social process, brings with it an increasingly critical appraisal of the self (i.e., one's
past as representing foolishness and wasted time), increased material aspirations and thus higher evaluation of legitimate employment, greater relational ties to others (wives and family), and disengagement from criminal subcultures (Shover, 1985). Taken together, education brings with it an increasing involvement with conventional others and conventional lines of action (integration) which are more likely to be perceived as stakes in conformity. Simultaneously, the attraction and differential association with deviant others is likely to decrease.

Thus, a valence model, which leads to the measure of pushes and pulls, and their strengths, seems to be the logic by which one can begin combining the relevant parts of those theories most directly applicable to the problem at hand. To the extent that we can measure and add the influences suggested by the above perspectives, our ability to predict disengagement from crime should be enhanced.

Expected Relationships

Although the individuals to be studied in this dissertation differ in several ways from those in Hirschi's research, in that they have been adjudicated as criminal, they are also slightly older and may have had more opportunities to develop relationships outside of their neighborhoods, peer groups, and family. Thus the operationalization of the elements of the social bond may
in some cases be somewhat different than in Hirschi's work; however, the expected effects of the social bonds should not differ.

On average, as attachment to the positive aspects of the community increases, it is expected that the chance of success after release from prison will also increase. The greater either the expressed attitude (as measured by some undetermined instrument) and/or the observed behavior (as determined through correctional education participation) toward a positive attachment to parents, spouse, education, or community, the greater is the likelihood of success after release.

As commitment to the conventional community increases it is expected that the chance of success after release will increase. It is also expected that the greater the amount of prior criminal activity, the greater the amount of education required to offset the deviant subculture. The greater the commitment to education, training, and job, the less likely is a return to crime; thus the likelihood of success after release is expected to increase. Commitment to a conventional life style, increase in years of education, continued employment, and a reduction in criminal activity, will provide a measure of this social bond.
Involvement in conventional activities is expected to increase the chance of success after release. Involvement in non-criminal activities is expected to increase, as the amount of time which the offender is involved in criminal activities decreases. A decrease in the amount of time spent with deviant others is expected to increase the chance of success after release.

Belief appears to be a key independent variable, in that deviance tends to go up as internalization of the norms of the community decreases. The expected relationship is that, as belief in the conventional life style (as measured by increased education level) increases, the chance of success after release also increases.

As an indicator of projected success after release, education is important at three points in the life cycle of the criminal career. These points are the education level at the inception of the criminal career, the education level at the current offense, and the education level of the offender at the time of release. At each point the expected relationship is such that as education increases, the likelihood of failure at each point decreases.
CHAPTER III
REVIEW OF THE LITERATURE

Crime

An alarming feature of American society today is the pervasiveness of crime and the apparent inability of counteracting forces to curb criminal activities. In 1968 Robert Kennedy referred to the spreading incidence of crime as a threat to the most elementary of freedoms for all Americans - freedom against arbitrary interference with one’s bodily security or property. Three decades later the problem of crime has only increased in magnitude and is particularly great in large cities where 90 percent of Americans reside.

The crime problem is not unique to any one state or local jurisdiction. It is a national problem. In 1997, over 3 million violent crimes were committed in the United States; 1.58 million arrests for drug violations were initiated; and 248 homes out of 1000 were victims of property offenses (Federal Bureau of Investigation, 1997). As past research has demonstrated, these figures do not constitute the total crime picture since most crimes go unreported.

Criminologist have long been concerned with explaining why crime and crime rates are not randomly distributed throughout time and space, and at least three different levels of analysis have been employed. Researchers from the
early Chicago school noted uniform concentrations of crime rates within particular urban sectors. These areas also manifested a low degree of stability; thus, crime rate variations were attributed to social disorganization (Shaw & McKay, 1931).

Subsequent researchers attempted to refine the unit of analysis via the gradient hypothesis. They concluded that crime rates were inversely related to the distance from a city nodal point (Haynes, 1933; Lind, 1930; White, 1931). Other initial studies indicated a propensity for higher crime rates in the central city rather than in surrounding areas (Baggs, 1965; Schmid, 1960; Wolfgang, 1958).

Harries (1976) theorized that geographic patterns of crime have profound implications for lifestyles at both the intra and interurban levels. Cities with crime rates that are known to be high may repel potential migrants and discourage the establishment of economic activities. Within cities, high crime neighborhoods foster fear among residents and visitors alike. The "unsafe streets" cliché has long since become embedded in the national consciousness and has helped to recreate the medieval walled city, the private suburb which shelters its citizens from the world at large. The fear of crime tends to reduce mobility and make for a more introspective and security conscious society.
Considering policy and planning implications, Harries (1976) questioned the assumption that upgrading the criminal justice system was the most direct route to crime reduction. Research continues to demonstrate that a host of cultural and environmental factors contribute to crime, and a much larger range of expertise should be brought to bear on issues of crime control and prevention.

Harries (1976) is not the only scholar to consider expanding the range and expertise of individuals to address the problems of crime. Twenty years later, Durant (1999) suggested a paradigm shift and considered viewing crime and violence as a major public health problem. In a recent article he states:

I argue that an integrated paradigm that focuses on prevention of [crime and] violence is needed and that research from sociology, in collaboration with other disciplines, could be useful in the development of such a paradigm. The rationale for the proposed paradigm is that violence [and crime] is a major health problem in the United States and that the definition of health problems in the United States should be expanded to include interpersonal violence in addition to conventional diseases (Durant, 1999, p.1).

It appears that corrections is now in a theoretical revolution. During times of normal science, research is carried out within the accepted paradigm (Kuhn, 1972). In some sense corrections might be said to have had a period of normal science when the generally accepted model was a medical model. Eventually, it is hypothesized, the number
of discrepant findings becomes so large that researchers
begin to question and eventually reject the paradigm. A
revolutionary period follows. This is a period of
questioning the old paradigm prior to acceptance of a new
paradigm. It is characterized by uncertainty and competing
theories.

After Martinson's 1974 investigation established a
"nothing works" philosophy, a paradigm shift began to
occur: a shift in models, theories, and methods.
Subsequently, the National Academy of Sciences' Panel on
Research on Rehabilitative Techniques concurred with
Martinson's conclusion, stating, "The entire body of
research appears to justify only the conclusion that we do
not know if any program or method of rehabilitation that
could be guaranteed to reduce the criminal activity of
released offenders" (Sechrest, White, Brown, 1979, p.3).
The panel further stated, however, that the conclusion that
"nothing works" may be premature, pointing out that much of
the research on rehabilitative techniques focused on weak
and poorly defined programs with weak and poorly defined
methods (Sechrest, White, Brown, 1979).

Corrections

If we are to reduce crime, so it has been argued, we
need to execute a large number of violent offenders and
hand out long and inflexible prison sentences to most other lawbreakers (Duster, 1987; Elikann, 1996).

Historical accounts of societal responses to lawbreakers from the beginnings of American society up to the period just prior to World War II make it clear that treatment, rehabilitation, and similar themes were virtually unheard of over that long period of American history (Allen & Simonsen, 1995; Carleton, 1971). Punishment, incapacitation, and retribution were the guiding ideas that drove societal reactions to offenders (Hawkins & Alpert, 1989; Carlie & Minor, 1992). But in the postwar period, it was suggested that prisons should be places where treatment as well as punishment was offered and that probation offices should endeavor to assist lawbreakers into become law-abiding.

Most of the correctional employees who were identified as treatment workers, whether in prisons or on the outside, either had no training for the task or were social workers who had been educated in generic principles of social work.

Correctional treatment work in the early postwar period was an example of what sociologist Erving Goffman once referred to as "the tinkering trades". That is, intervention activities unguided by any coherent body of theory and/or empirical research regarding the causal factors or experiences in the backgrounds of offenders that
should to be targeted by clearly articulated intervention tactics or strategies. In an address to the California Probation, Parole, and Corrections Association Donald Cressey (1960) attacked these kinds of social work principles and called for more rehabilitative practices based on theory, the scientific method, and empirical validation.

What has occurred in the way of positive developments in corrections in the past decade? In response to the American public’s growing fear of crime and the call for more punitive measures to combat such fear, many legislators and policy makers have promoted building more prisons, enacting harsher sentencing legislation, and eliminating various programs inside prisons and jails.

The drive to incarcerate, punish, and limit the activities of prisoners has often resulted in the elimination of strategies and programs that seek to prevent or reduce crime (Gendreau & Ross, 1987; Andrews, et al., 1990). Currently, over 1.6 million individuals are housed in adult correctional facilities in the United States (Gillard and Beck, 1997) and at least 99,682 juveniles are in custody (DeComo et al., 1995).

At present, the nation's jail and prison populations are increasing at the same time that resources to serve inmates are tightening. Many states are still reeling from
an economic slowdown in the early 1990s that reduced appropriations for many social services (ETS, 1998; Taylor, 1993). Further, public sentiment appears to be moving away from the rehabilitation of the nation's incarcerated population towards a more punishment-oriented approach (Maguire & Pastore, 1996). This is reflected in increased penalties (Sherman, 1997), more rigid sentencing standards (Viscusi, 1986), and budget allocations directed more toward the construction of new correctional facilities rather than toward rehabilitation-oriented programs (Marks, 1997).

**Recidivism**

In the broadest terms, it is the social problem of crime that is the center of concern for this section of the literature review. However, specifically, it will focus on recidivism, the unfortunate tendency of persons convicted of felonies at one point in time to be arrested and convicted again, sometimes to repeat this sequence over and over.

The extent of this problem and its impact on our society are both considerable. The prison population of the United States - including those serving time in both federal and state prisons - hovers around 1.6 million people (Gillard and Beck, 1997), enough people to fill a large sized city. Most prisoners (94%) are men. The vast
majority are in their middle twenties and are serving terms between two and four years; they have usually been in prison before. Most of these offenders have long histories of brushes with the law, starting with arrests as juveniles and often including some time spent in juvenile institutions. Three out of five of the felons in state prisons have been convicted of felony charges involving property crimes, the most frequent specific charge being burglary and drug violations.

Nationally, reported rates of recidivism for adult offenders in the United States are extraordinarily high, ranging from 41% to 65%, depending on the population and area studied (Harer, 1994; Journal, 1995). The national re-arrest rate, around 73%, is different from the re-imprisonment rate (Bureau of Justice Statistics, 1997). Programmatic efforts to reduce recidivism have ranged from boot camps and shock incarceration facilities (Sherman, Gottfredson, MacKenzie, Eck, Reuters, & Bushway, 1996) to prison-based education efforts (Tracy & Johnson., 1994).

**Income, Employment, and Recidivism**

For offenders, one of the most critical factors for successful reintegration into the community is having a job. But finding a job, especially one that offers adequate wages and meaningful work, is extremely difficult without effective training, education, and assistance. Vocational
training programs exist in virtually every prison in the U.S., but only a few provide training for skill development in current occupations. Many prison training programs center around the needs of the facility, thus leaving the inmate unskilled to work outside the institution after release (Dowing, Stitt, & Murray, 1987).

The notion that unemployment is an important determinant of crime has been a major theme in the criminology literature (Chiricos, 1987; Genevie, Margolies, & Muhlin, 1985; Hale and Sabbagh, 1991). Numerous studies have focused on longitudinal and cross-sectional aggregate crime and unemployment rates (Brenner, 1976; Freeman, 1983; Glaser & Rice, 1959) or recidivism among individual offenders under different employment circumstances (Anderson, Schumacker, & Anderson, 1991; Berk, Lenihan, & Rossi, 1980; Friedman, 1978; Genevie, Margolies, & Muhlin, 1985).

Although research consistently shows a positive relationship between unemployment and crime, the strength of this relationship varies. Some authors have indicated only a moderate connection between these variables (Freeman, 1983), while others have found the relationship compelling (Duster, 1987; Glaser & Rice, 1959; Thompson, Sviridoff, & McElroy, 1981; Viscusi, 1986; Williams, 1984).
One source of ambiguity regarding the strength of the association between unemployment and crime may be the marginal nature of jobs available to ex-offenders. Freeman (1983) has suggested that criminals form the back of the job line and are only indirectly affected by the general level of unemployment; employers will hire other workers before ex-offenders. Thus, under normal conditions, it takes a huge decrease in the overall level of unemployment to raise the criminal's potential for employment. To the extent that opportunities available to ex-offenders are restricted to low-paying or temporary jobs that cannot provide the offender with a livelihood above impoverishment, employment may not be sufficient to resist criminal activity (Berk, Lenihan, and Rossi, 1980). Job stability and job quality are significant unmeasured variables in most recidivism studies.

Despite long standing debates about employment and crime, studies focusing on the relationship between socio-demographic variables, labor market experience, and recidivism have confirmed several relationships:

1) Age and recidivism are inversely related (Thompson, Sviridoff, & McElroy, 1981).

2) First time offenders are among the most successful parolees (Anderson, Schumacker, and Anderson, 1991).

3) Ex-offenders who committed property crimes or larcenies were more likely to recidivate than other
ex-offenders who committed other crimes (Crutchfield, 1989).

4) Minority group members are disproportionately represented as inmates and recidivators. However, research has suggested that there are differences in reaction to labor market interventions. African-American ex-offenders have been shown to be responsive to post-prison assistance (Mallar & Thornton, 1978).

Research by the Corrections Department of Texas indicated that vocational training in corrections is not effective unless the trainee is ultimately employed in a training related job when released (Whitson, 1974). In a related study, Miller (1972) found a strong relationship between useful vocational training obtained in prison and parole success. He concluded that prison vocational training programs should take into account such factors as job training associated with current and future labor needs, capabilities and interests of inmates, and the social desirability of jobs in terms of their prestige and income potential.

Self-identity, Cognitive-development, and Recidivism

According to the 1993 National Adult Literacy Survey (NALS), the majority of inmates in our nation’s prisons have lower literacy skills and lower educational attainments than adults in the nation as a whole (Anderson, Schumacker & Anderson, 1991). Research indicates that most inmates are also poor, unskilled, were unemployed or under-employed prior to conviction, and have a greater
likelihood of being learning disabled (Berk, Lenihan & Rossi, 1980; Chiricos, 1987; Duster, 1987).

Characteristics such as impulsivity, poor social skills, short-term memory problems, and difficulty with attention may predispose individuals with learning disabilities to problems with the law (Gendreau & Ross, 1987).

Research examining the interactions among individual differences, types of treatment, and nature of settings transcends virtually all content areas in the corrections rehabilitation literature. These studies have produced numerous documents devoted to the psychometric properties of inmates (Reitsma-Street & Zager, 1986), practical application of behavioral categories (Quay, 1979), Conceptual Level Matching Model (Harvey, Hunt, & Schroder, 1961), Interpersonal Maturity Level (I-Level) (Warren, 1969), the Minnesota Multiphasic Personality Inventory (Megargee & Bohn, 1979), and Moral Development (Kohlberg, 1969).

Much of the persuasive outcome literature, most of which comes from I-Level programs (see Warren, 1969), was published in the last few decades. Lukin’s (1981) study, based on personality types derived from I-Level theory, emphasized that personality and change must be taken into account in examining the effects of programs on inmates. Otherwise contradictory effects will obscure the potency of
interventions. Lukin found that both increases and decreases in personality change for neurotic acting-out or anxious types during treatment in two California Youth Authority institutions were predictive of recidivism on parole.

From a somewhat different perspective, the research of Michael Chandler (1973), Irwin Sarason and Victor Ganzer (1973) are good examples of a social-learning, modeling-based, approach to behavior modification for inmates. Chandler (1973) argued that social deviance is associated with persistent egocentric thought and used role playing sessions to break down this style of thinking; the intervention and follow-up period lasted eighteen months. Egocentric thinking patterns diminished, role-playing ability improved significantly, and the group’s recidivism rate was 50 percent lower than those of a comparable control group from the same geographic area; a control group from a middle-class environment; a placebo-attention control group; and a group receiving no treatment. In a five year follow-up, Sarason reported recidivism rates of 23 percent for each of two treatment groups compared to 48 percent for the controls (1978).

Jurkovic’s (1980) review of the moral development literature suggested that rather than focusing on the content of the offender’s moral orientation (beliefs about
moral rules and roles), it would be more fruitful to examine the offenders reasoning concerning moral "oughts" in various situations.

With this approach in mind, and drawing upon cognitive-development theoretical perspectives (Kohlberg, 1969; Piaget, 1965), Arbuthnot and colleagues (Arbuthnot & Faust, 1981; Arbuthnot & Gordon, 1986; Arbuthnot, Gordon, & Jurkovic, 1987) explored systematically the utility of interventions to develop moral reasoning among high-risk pre-delinquents. Their 1986 publication was one of the first to link the enhancement of cognitive and moral structures with changes in antisocial behavior. A one year follow-up found significant increases in moral reasoning, grades, and attendance, and decreases in behavioral referrals for the treated group in comparison to a matched randomly assigned non treatment group of students.

This literature review has spawned two concepts that can augment future offender research when individual differences are considered. The concepts are those of need and responsivity assessment. It appears that assessment tools that stress the measurement of static variables, such as age at first arrest, parental SES, and previous convictions, are not especially helpful in designing rehabilitation programs; the offender can do little about the past. The targeting of dynamic variables as represented
by personal needs appears to be more productive in dealing
constructively with the offender's current situation. It
would appear then that high risk inmates will be able to
respond positively only to programs that are tailored to
fit their abilities and learning styles.

**Education**

John Dewey once wrote:

> All that society has accomplished for itself is put, through the agency of the school, at the disposal of its future members. All its better thoughts of itself it hopes to realize through the new possibilities thus opened to its future self. Here individualism and socialism are at one. Only by being true to the full growth of all the individuals who make it up, can society by any chance be true to itself. And in the self-direction thus given, nothing counts as much as the school (education) (1900, p.7).

According to the Federal Bureau of Prisons, there is an inverse relationship between recidivism rates and education. The more education received while in prison, the less likely an individual is to be re-arrested or re-imprisoned (Harer, 1994). A report issued by the Congressional Subcommittee to Investigate Juvenile Delinquency estimates that the national recidivism rate for juvenile offenders is between 60% and 84% (Brunner, 1993b). For juveniles involved in quality reading or instruction programs alone, the recidivism rate is reduced 20% or more (Brunner, 1993b).
A five year follow-up study conducted by the Arizona Department of Adult Probation concluded that probationers who received literacy training had a significantly lower re-arrest rate (35%) than the control group (56%), and those who received GED education had a re-arrest rate of 24%, compared with the control group’s rate of 56% (Siegel, 1997). In the same study, inmates who received at least two years of college education had a re-arrest rate of only 10%. Studies conducted in Indiana, Maryland, Massachusetts, New York, and several other states have all reported significantly lower recidivism rates for inmate participants in correctional higher-education programs, ranging from 1% to 15.5% (Bettendorf, 1996; Tracy and Johnson, 1994).

Corrections Education

One of the most characteristic and persistent attributes of prison inmates in the United States has been their educational deficiency. This is, in large part, due to the selection process of the criminal justice system: most inmates are from the lower socioeconomic classes. Rather than being improved, this lower class status has been perpetuated by the lack of adequate educational services in communities and prisons, and by the lack of programmatic options to incarceration. A survey of correctional education prepared by the education commission
of congress summarized the educational problems of prison inmates as follows:

Unofficial estimates by the officials of the Federal Bureau of Prisons reflect that fifty to sixty percent of all adults in incarcerated American federal and state prisons can neither read nor write.

As many as eighty percent of the clients within some of the juvenile facilities are illiterate.

Up to ninety percent of the adult clients of the penal system are school dropouts.

In a majority of prisons, more than fifty percent of the adults incarcerated above eighteen years of age have less than an eighth grade education (Task Force Report, 1987, pp. 2-3).

History of Correctional Education

Prisons were used in Europe as early as the 12th century; however, they were not originally considered necessary by the founders of the new colonies.

In 1787, concerned citizens of the Pennsylvania Quakers founded the Pennsylvania Prison society and built the first prison in the United States. The period from 1787 to 1875 has been called the Sabbath school period, and corrections were centered around the goal of reconstructing the criminal through penitence. As initially conceived, penitence was to consist of Bible study and reflection in solitude (Neithercutt, 1969). The equation of education with religious and moral training was not a new concept to education; religion was a dominant orientation in the first public schools. The three "R's" were taught in the new
penal system: religion, reading, and "riting". These three educational fundamentals were not taught for their separate value, but as a means for learning discipline and reading religious writings.

The period 1876 to 1900, is marked by Zebulon Brockway's tenure at the Elmira Reformatory. In the last half of the 19th century an extensive reform movement occurred which began to question some of the basic tenets of contemporary penal philosophy. The conception of the criminal as immoral shifted to a more complex view in which the criminal was not simply a sinner, but deficient in additional ways: intellectually, psychologically, and vocationally. A more sophisticated penal routine was required for his/her reformation. Some of the changes implemented in penal systems of this period were separation of young and adult criminals, the establishment of juvenile courts and reformatory systems, and the introduction of indeterminate sentences. It was during this period that educational and vocational training programs became more formalized and available to larger numbers of inmates; educational skills were now seen to have some value of their own (Brockway, 1912).

After the turn of the 20th century a new force entered the prison education world. Because of the industrial revolution, cities were growing in number and size; the
level of educational skills required of the labor force was increasing. The period from 1901 to 1929 contained many major prison reforms, including libraries, separate reformatories for women, and more democracy in correctional settings.

Prisoner education was affected by changes taking place in the general society's educational system. However, it was the notion of a universal right to a high school education rather than a change in curriculum that had the most significant effect. Although the content of the education provided in prisons always had been viewed in essentially pragmatic terms, rather than in the classical tradition, formal academic education had never been intended for all inmates. The right of prison inmates to anything has been a concept that prison officials and the general society have been slow to acknowledge. Education was considered to be an amenity and, therefore, a privilege.

Even today, few prisons have structured their prison routines to allow and facilitate the completion of high school by all inmates. Usually the inmate's work responsibilities and the maintenance and operational needs of the institution preclude full participation in an education program by all inmates who need it.
The years 1930 to 1941, are often considered the "Golden Age" of corrections education. It was during this time period that the Correctional Education Association was founded in 1931. Austin MacCormick was one of the major reformers of this period and responsible for many innovative programs within prison institutions, including special education for inmates. In 1931 MacCormick made the following statement:

If we believe in the beneficial effect of education on man in general we must believe in it for this particular group [inmates], which differs less than the layman thinks from the ordinary run of humanity. If on no other grounds than a general resolve to offer educational opportunities to undereducated persons wherever they may be found, we recognize that our penal population constitutes a proper field for educational effort. In brief, we are not ready to make its efficacy in turning men from crime the only criterion in judging the value of education for prisoners (MacCromick, 1931, p.3).

From 1930 to the end of World War II, education in prisons expanded rapidly. It was during this period that many penal institutions developed complete high school programs within their walls; and several prisons, such as San Quentin, began offering college courses by correspondence.

After World War II, 1946-1964, a new concept of prisoner rehabilitation gained a foothold in correctional philosophy. In essence, the remodeling of the criminal was still paramount; but in this new penological era the
concept of the criminal had changed. This is a period marked by a proliferation of social programs. The social sciences, especially psychology and sociology, had a profound impact on correctional ideology. The new criminal was no longer a free-willed (although deficient) being, but a determined one, propelled by psychopathologys or other personal problems rooted in early childhood or teenage experiences.

Two aspects of the new rehabilitation era are important in understanding the nature of prison education. First, the criminal was viewed as a person who had psychological problems that had to be "cured". Second, no one pathology was seen as causing all crime. Each criminal, therefore, needed a specialized rehabilitative routine. In those prison systems that implemented the new rehabilitative ideology, this philosophy resulted in considerable experimentation with different programs. Educational programs, including college, were among these (Cressey, 1961; Irwin, 1970).

The period from 1965 to 1980 was a period of expansion as well as a period of paramount uncertainties. From 1965 to the mid 1970s there was a period of massive federal influence which marked a major period for post-secondary education in prisons, the establishment of correctional school districts, and correctional education teacher
preparation programs. However, after the 1974 Martinson report - "nothing worked" - federal support for correctional education began to decline.

After the late seventies, fueled by a sizable collection of books and articles that concluded that as far as correctional treatment was concerned, nothing works, or, at best, not much works, the pendulum swung away from rehabilitation toward deterrence and incapacitation (Bailey, 1966; Greenberg, 1975; Lipton, Martinson, & Wilks, 1975; Martinson, 1974; Robison & Smith, 1971; Sechrest, White, & Brown, 1979; Wheeler, 1969). This occurred at the same time prison populations were expanding, prisons were overcrowded, budgetary cutbacks were rampant, and the public was calling for punishment.

**Corrections Education Today**

A review of the literature on correctional education for adult offenders reveals a considerable number of studies that have attempted to document the effectiveness of specific programs, either within a single institution or in several institutions within a state. These studies more often than not attempt to draw a relationship between educational programs and recidivism. There have been several studies that have focused on identification of problems or barriers to education. While some of the
studies report state program participation, a few studies have been conducted nationally.

The literature is replete with reports of studies designed to prove the effectiveness of educational programs for adult offenders. Some of these studies link education and achievement (Anderson, Schumacker, and Anderson, 1991), and others attempt to show the impact of education on recidivism (Berk, Lenihan, and Rossi, 1980). There has been a continuing debate over the years concerning the effects of education on recidivism (Brunner, 1993; Chandler, 1973; Downing, Stitt, and Murray, 1987), successful post-release adjustment and employment (Anderson, Schumacker, and Anderson, 1991; Freeman, 1983), and the interweaving relationship of education, income, and recidivism.

It is generally conceded that the evidence linking participation in education programs with reduced recidivism or post-release adjustment and employment is not conclusive, and, at best, only inferential relationships can by hypothesized. Coffey (1982) noted that the impact of correctional education on post-release behavior has yet to be determined and that quality education coupled with work experience and gradual release has not been tested.

In a review of the research on effectiveness of prison education programs, Linden and Perry (1992) concluded that although education programs appeared to be
relatively common in prisons, the research that has been reported is not conclusive. Linden and Perry found that most of the studies have shown that inmates participating in educational programs make significant improvements in learning, but the impact on post-release employment and recidivism has not been conclusively established.

While accepting the findings that the evidence is not conclusive to show a direct causal relationship between reduced recidivism and participation in educational programs, McCollum (1988) observed that many correctional educators make arbitrary and unnatural distinctions between academic and vocational education, operating under the false assumption that academic education is not job training. This is done despite the impressive research data which establishes that a high school diploma or a college degree significantly enhances lifetime occupational earning power even when controlling for gender, race, and past criminal activity (Greenwood, Model, Rydell, and Chiesa, 1996).

After conducting a study to determine if variations in the quality of vocational education offered in prisons and skill levels developed by participants in these programs related to post-release adjustment, Lewis and Seaman (1978) concluded that the evidence did not demonstrate a relationship between the prison vocational education
program and post-release adjustment of former inmates. Based on their findings, these researchers concluded it is not possible to determine what features of vocational training make it effective. These findings are in agreement with the conclusions of McCollum (1988), Coffey (1982), Linden and Perry (1992), and others with regard to the lack of conclusive data to demonstrate a causal relationship between correctional education and reduced recidivism.

Education Programs and Characteristics

Today, correctional education is seen as that part of the total correctional process of changing behaviors of offenders through purposefully contrived learning experiences and learning environments. Correctional education seeks to develop or enhance knowledge, skills, attitudes, and values of offenders (Ryan, 1983). Davis (1973) saw correctional education as a "comprehensive and intensive approach to education" (p.8). Davis saw a system where not only basic education skills were provided by equal emphasis was placed on creating a more positive self-image; thus entailing a unified treatment effort. Depee (1975) agreed with Davis (1973) and stated: "Correctional education should provide a balanced approach that emphasizes equally the need for personal growth and adequate preparation for life in the home, in the market.
There is a consensus among scholars that correctional education is comprised of four general categories of educational programs that are found in correctional institutions across America: Literacy and Adult Basic Education (ABE), Secondary/General Educational Development (GED), Vocational Training, and Post secondary/Higher Education programs. Bell, et al. (1979) stipulate a fifth category, social education. They define it as a recent, yet vaguely defined, category which overlaps and often incorporates the other four.

ADULT BASIC EDUCATION (ABE): Adult basic education includes instruction designed to improve literacy, linguistics, and numerical skills of those inmates who are functionally illiterate and unprepared for implementing the responsibilities of adults in a free society.

Forty states currently offer ABE programs in their institutions. However, only 91% of the institutions in these states have the programs available (OCE, 1996).

SECONDARY/GENERAL EDUCATIONAL DEVELOPMENT (GED): Secondary education is for those who are functioning at the secondary level of achievement. These programs may be provided through regular high school diploma courses, but more commonly they are provided in correctional
institutions through GED preparatory programs designed to prepare individuals for taking and successfully passing the General Educational Development Equivalency Examination.

Forty states currently offer GED programs in their institutions. However, only 92% of the institutions in these states have the programs available (OCE, 1996).

Data from 1996 reveals that most facilities offer ABE and GED preparation courses. Twenty-three of the forty states offering these courses offer both programs at all correctional institutions within the state.

The results are promising, but there remains a large number of states and institutions which do not offer basic education for offenders.

VOCATIONAL TRAINING: Vocational education is designed to provide learning experiences to develop occupational awareness, give exploratory job experiences, and develop job skills and work habits in preparation for gainful employment. Vocational training is provided through on-the-job-training and related classroom lectures.

An average of 69% of correctional institutions within the United States offers some type of vocational education. However, eight states do not offer any type of vocational programs. The two states with the lowest percentages of vocational offerings are Mississippi and Nevada (OCE, 1996).
POST SECONDARY EDUCATION: Post secondary education includes any college courses, and may be offered through two-year or four-year institutions of higher education. Inmates gain college credit for courses taken and may complete requirements for associate, bachelors, and masters degrees.

Post secondary education is offered in thirty-eight states and over 60% of the institutions (OCE, 1996). However, these numbers are deceiving. Currently there are only thirteen institutions with true post secondary education programs. The remainder claim participation, but the inmate must pay for the course offerings, and course offerings are only available through correspondence.

Identification of Barriers to Correctional Education

The Education Commission of the United States conducted a three-year national project that identified major issues in adult and juvenile correctional education with implications for policy development (Peterson, 1986). One of the purposes of this project was to identify alternatives to existing educational programs and to correctional practices that detracted from the effectiveness of education for adult and juvenile offenders (Pierce and Mason, 1986).

A national survey by a research team from Lehigh University (Bell, Conrad, Laffey, Lutz, Miller, Simon,
Stakelon, and Wilson, 1979) reported that "the" major problem in correctional education is a lack of funding, and this is reflected in the quality of administration, lack of resources, and inability to offer meaningful programs on a continuing basis.

Reagen and Stoughton (1976), from the Syracuse University Research Corporation, visited thirty-eight prisons and seventeen central prison system offices in twenty-seven states, analyzed 360 publications, and interviewed or corresponded with over 300 prison experts to gather data providing the basis for identifying problem areas and projecting the future of corrections education.

In addition to the funding issues addressed by Bell, et al (1979), Reagen and Stoughton (1976) reported problems with the paradox surrounding student-as-prisoner and prisoner-as-student. There is a natural built-in conflict surrounding the general social beliefs about what it means to be a prisoner and what it means to be a student. There are built-in contentions between admission and achievement; public safety and individual instruction; curriculum and confinement.

Conrad (1981) reported a review of the state of the art in correctional education programs for adult offenders based on data from interviews with correctional staff and prison authorities. The study included on-site visits to

72
twelve institutions and a thorough narrative literature review. This study also identified major obstacles to correctional education, such as: lack of funding, staff resistance, and administrative indifference.

In a similar qualitative study, Horvath (1992) surveyed correctional education administrators to determine their perceptions of the major problems in correctional education. He found the perceived problems were related to staff turnover and staff shortages, inadequate funding, lack of power within the institution, and inadequate space. These problems were essentially the same as those that had been identified in the 1978 survey, and again in 1981, by Conrad.

A number of studies conducted have focused on vocational education problems in isolation. A report by the National Advisory Council on Vocational Education (1981) identified the major issues of concern to vocational education as: funding, administration, comprehensive programming, Federal policy, and leadership. The report was developed from testimonies given at four regional hearings in 1979. Carlson (1980) observed that vocational preparation in correctional institutions generally was inadequate; there was little or no coordination of correctional education services at federal, state, or local levels; and the fragmentation resulted in inadequate
funding and disjointed implementation of Federal legislation available to assist correctional institutions in providing educational programs.

In a second study related to vocational education programs, Rice, Poe, Hawes, and Nerden (1980) focused on barriers to successful vocational education programs in state prisons. The results of this study identified nine exemplary programs and assessed the variables commonly found in these programs.

At the same time, One America, Inc. (1980) conducted a study to describe vocational education programs in nine state correctional institutions for women. This study was also designed to identify elements of successful vocational programs and to assess the characteristics, needs, and aspirations of female offenders. Prisons serve the same purpose for women as they do for men; they are instruments of social control. However, the imprisonment of women, as well as their lives, takes place against a backdrop of unique relationships. Therefore, the imprisonment and rehabilitation of women in the U.S. has always been a different phenomenon than that for men; the proportion of women in prison has always differed from that of men; women have traditionally been sent to prison for different reasons; and once in prison, they endure different conditions of incarceration. Women's "crimes" often have a
sexual definition and are rooted in a patriarchal double standard.

A qualitative study conducted by Koons and her colleagues (1997) attempted to identify promising intervention strategies for female offenders. In their report, correctional administrators identified treatment needs they believed were related to the successful treatment outcomes of women. These needs included substance abuse education, basic education, vocational education skills, development of parenting and life skills, and interpersonal skills.

Koons, et al, (1997) argues that female offenders have several unique needs and concerns such as child care, pregnancy, and sexual or physical abuse victimization which must be addressed while incarcerated. These authors stated that "the question of whether or not [current] findings of effective correctional treatment can be generalized to the female offender population is very much in need of an answer" (p.517).

**Correctional Education Programs, Enrollment, and Administration**

Several studies have been undertaken that present data from national surveys of correctional education programs, enrollment, and administration. The findings of a 1980 needs assessment study of correctional education conducted by Ryan (1980, 1983) are congruent with the results of a
national survey conducted by the Western Interstate Commission of Higher Education (Dell'Apa, 1973). In the early 1980s, roughly 11% of all prison inmate populations enrolled in education programs were in ABE programs; 11% in GED or secondary education; 17% in vocational education; and 6% in post-secondary education. There appears to have been no significant changes in enrollment patterns from the early 1980s to the end of the 1990s, with the exception of higher education programs.

Petersilia (1987) analyzed data from a 1984 survey of state prison inmates conducted by the U.S. Bureau of Census involving interviews with 10,000 inmates from 190 state correctional facilities. The data revealed that at least 61% needed some form of vocational training and that 68% need academic education. This finding is close to the estimate of McCollum (1988) who reported that out of an average daily population of 400,000 offenders, about 150,000 were detained or serve sentences of such duration that it is not feasible to provide educational programming. However, the result was that roughly 250,000, or 62.5% could be potential students for correctional programs.

The effectiveness of prison-based programs varies, but research shows that prison-based education and literacy programs are much more effective at lowering recidivism rates than either boot camps or shock incarceration.
(Anderson, Schumacker & Anderson, 1991; Corcoran, 1985; Sherman, Gottfredson, MacKenzie, Eck, Reuters, & Bushway, 1996). For example, in a recent report on crime prevention programs conducted at the request of the U.S. Justice Department (Sherman et al., 1996), researchers at the University of Maryland found that teaching reading skills to juveniles worked significantly better to reduce crime than boot camp programs. In a similar study Mosso (1997) said: "Correctional education appears to be the number one factor in reducing recidivism rates nationwide" (p. 286).

**Meta-Analysis**

The correctional educational research enterprise has grown tremendously in the last thirty years. The literature in the areas of corrections, education, and psychology has produced hundreds of studies related to the topic. Yet, few would argue that the knowledge base of the social sciences in this field of inquiry has grown as rapidly as the volume of research studies. Some critics and many reviewers contend that our state of knowledge has remained unchanged despite the best efforts of the social science community (Cooper & Hedges, 1994; Glass, 1976; Hedges & Olkin, 1982). Until recently, research reviews that yield equivocal conclusions have been the exception rather than the rule (Hedges & Olkin, 1982; Straf, 1990).
Much of the work performed in literature reviews until the late 1980's has been in a narrative or ballot box approach; both of these methods have proved to be low in conclusive power (Wolf, 1986). Glass (1976) noted that "the typical reviewer concludes that the research is in horrible shape; sometimes one gets results; sometimes one does not" (p. 3). Glass (as cited in Wolf 1986) found it ironic that traditional reviews of scientific data have been done in an unscientific, impressionistic fashion.

The recurrence of equivocal conclusions from research reviews led some investigators to speculate that the process of research review might be at fault. Light and Smith (1971) were among the first investigators to examine the problem of integrating the results of quantitative studies in the social sciences. They demonstrated the importance of systematic analysis of variations in design and execution of studies as well as the variation in study outcomes.

Light and Smith (1971) also generalized an approach from cluster sampling to generate an extensive algorithm and analysis strategy for a series of similar experiments. Unfortunately, their approach requires access to the original data, which limits its practical usefulness in research integration.
Light and Smith (1971) asserted that, at that time, a technique called vote-counting was the most commonly used method of integrating research studies. In their formulation, a number of studies compare the scores of tests of two groups; one group of subjects receives an experimental treatment, and the other group receives no treatment. In the vote-counting method the available studies are sorted into three categories: those that yield positive significant results, those that yield negative significant results, and those that yield non-significant results.

If a plurality of studies falls into any of these three categories, with fewer falling into the other two, the modal category is declared the winner. This modal categorization is then assumed to give the best estimate of the true relationship between the independent and dependent variables (Light & Smith, 1971, p.433).

Despite the obvious simplicity of vote-counting methods, these techniques have serious problems. The deficiency of vote-counting methods stems from their reliance on tests of statistical significance in individual research studies. Hedges and Olkin (1980) proved that when studies typically use small samples or when the phenomenon under study produces small effects, vote-counting methods systematically fail to detect true effects. The reason for this behavior is related to the low statistical power of significance tests when effects or sample sizes are small.
However, small effects are the rule rather than the exception in most social science research.

For example, Gage (1978) has noted that the magnitude of the relationship between any teaching variable and achievement is likely to be small, although the cumulative effect of many such variables is not negligible. Similar arguments have been made about the magnitude of relationships in recidivism studies and social psychology.

The consequences of small effects and sample sizes on the power of statistical analysis in educational and psychological research is illustrated in surveys of statistical power of published research. Brewer (1972) calculated the power of studies published in three educational research journals. His analysis showed that the power of published studies to detect small effects (a mean difference of 0.2 in standard deviation units) was uniformly low. Only two percent of the 55 studies surveyed from the American Educational Research Journal had a power greater than 0.3 to detect an effect that small. Thus the probability of Type II errors (failure to reject the null hypothesis when it is false) seems unacceptably high in these studies.

Similar results have been found in surveys of studies in abnormal psychology (Cohen, 1962), communication research (Katzer & Sodt, 1973), and applied psychology.
(Chase & Chase, 1976). If these surveys of social science research are representative, failure to reject the null hypothesis in individual research studies cannot provide much assurance that small effects are not present.

A new approach to the problem of research integration was proposed by Glass in 1976. He argued that estimation of the magnitude of the experimental effect is perhaps more important than statistical significance. Glass suggested that the "effect size" in a two-group experiment be defined as the difference between the experimental and control group means divided by the control group standard deviation.

$$\Delta = (\bar{x}_1 - \bar{x}_0)/S_x$$ (Glass, 1981, p.102).

Glass coined the term "meta-analysis" to describe the analysis of these "effect sizes" from a series of studies. Meta-Analysis allows researchers to take results from a variety of studies with an uncommon outcome measure and obtain a measure of effectiveness for all.

According to Glass (1976) meta-analysis

"...refers to the analysis of analyses ... the statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating findings. It connotes a rigorous alternative to the casual, narrative discussions of research studies which typify our attempts to make sense of the rapidly expanding research literature" (p.5).
The purpose of a meta-analysis is to provide a systematic review of the literature in an explicitly defined field, producing a statistical effect size. Meta-analysis looks for common statistical patterns in the research literature, such that inferences can be drawn about the effect size (or predictive capacity) of variables (Cohen, 1977; Glass, 1976; Hunter, Schmidt, and Jackson, 1982).

Rarely in social scientific experiments do "single experiments or studies provide sufficiently definitive answers upon which to base policy" (Hedges & Olin, 1982). Divergent definitions, variables, procedures, methods, samples, and other problems make it difficult to assess a large number of studies. Very often conclusions are at odds between studies, and there is the unending call for further research.

Meta-analysis has become an important supplement to traditional methods of research reviewing, largely as a result of the work of Glass and his colleagues. They demonstrated that the technique could be used to provide sensible answers to fundamental questions in the behavioral sciences. The first application of meta-analysis was the integration of studies on the effects of psychotherapy (Smith & Glass, 1977). This first meta-analysis intrigued many and stirred controversy for others.
A series of other analyses, including the analyses of the effects of class size (Glass & Smith, 1979; Smith & Glass, 1980), have continued to provide strong evidence on long-standing controversies. The interest generated by these and other examples, along with a lucid treatment of the methods of meta-analysis have encouraged other investigators to use the technique. Meta-analytic methodology is particularly useful for combining the results of independent studies addressing a common research question - especially when the results of the studies are inconsistent (Wolf, 1986). In addition, meta-Analysis allows us to step back and see if there is merit in additional research along the lines proposed by current researchers.

In the criminal justice milieu meta-analyses have been conducted to summarize the research literature in areas such as racial disparities in sentencing (Pratt, 1998), the effects of psychological treatment interventions (Andrews, Zinger, Hoge, Bonta, Gendreau, and Cullen, 1990), the significant predictors of early adolescent delinquency (Lipsey, 1992; Loeber and Stouthamer-Loeber, 1986), and attitudes toward victims of sexual assault (Whately, 1996). However, to date, a meta-analysis has not been conducted exclusively on corrections education programs.
There are two possible advantages to a meta-analysis in corrections education as opposed to a single independent study in this context. First, meta-analytic methodology will yield a larger sample of corrections education effect evaluations than any of the independent evaluation research studies to date (i.e., more facilities may be examined.) Second, the impact of differences in program, individual, and institutional characteristics across independent studies can be determined through controls being achieved through coding procedures.

The distinctively different worlds of research and public policy were brought a little closer in 1994, when 150 senior officials from 30 different federal agencies and Congress attended the National Conference on Research Synthesis in Washington. The meeting, sponsored by the Russell Sage Foundation and organized by the American Psychological Society, featured presentations and panel discussions by experts in the field of research synthesis.

The conference had two main purposes: 1) on the research side, it was to showcase recent advances in research synthesis; and 2) on the policy side, it aimed to encourage more support for synthesis projects in federal research agencies and greater use of synthesis results by public policy makers in Congress and government agencies.
Several obstacles face science in the policy arena, and in large part policy boils down to the differences in how legislators and researchers view information. Making no statement seems a lot better to a researcher than making a statement based on incomplete data. In public policy making, positive value is placed on making a decision, regardless of whether there is sufficient objective evidence to support that decision. Legislators and researchers are separated by different goals, different standards of evidence, and different tolerances of uncertainty. The researcher's first goal, that of acquiring new knowledge, is far down the legislator's priorities. On the other hand, evidence, for the legislator, is merely incidental to a negotiation or a decision. For the researcher, evidence is the end in itself; and a researcher invokes certainty only when the evidence provides such certainty.

The major task in the behavioral and social sciences, as in other sciences, is the development of theory. A good theory is simply a good explanation of the processes that actually take place in a phenomenon. The social scientist is essentially a detective; his or her job is to find out why and how things happen the way they do. But to construct theories, we must first know some of the basic facts, such
as the empirical relations among variables; these relations are the building blocks of theory.

Meta-analysis provides these empirical building blocks for theory. Meta-analytic findings tell us what it is that needs to be explained next by the theory. This methodology, however, is not without its share of critics; and has even been criticized because it does not directly generate or develop theory (Guzzo, Jackson, & Katzell, 1986). This may be correct; however, typewriters and word processors don't generate novels on their own either.

Meta-analysis is a method of bringing the worlds of the legislator and the researcher a little closer together. It will aid in the further development of theory and indicate where the holes are in the research net, but we can not forget that it is just a tool.
CHAPTER IV
METHODOLOGY

In this section the research design, the sampling methods, a description of the sample, and the statistical analysis utilized are reviewed. Additionally, the operationalization of the predicative variables will be discussed as well as the dependent variable.

Programs that focus on improving skills among adult prison inmates must deal with the interaction of multiple environmental, educational, and social factors. Improving recidivism rates for prisoners released by the thousands back to their families and communities will take significant changes and interaction of resources within corrections, education, economic development, and human services.

Armed with studies collected from five disciplines - education, psychology, sociology, economics, and social work - this study focuses on providing tangible, replicable, and useful information concerning the extent to which the overall goals and objectives of adult correction education are realized in American penal institutions.

This study has been developed to accomplish three primary purposes. First, this study examines the outcome of comprehensive education programs on inmates who participated and completed them. Outcome is defined by the primary corrections goal, which is reduced recidivism.
Secondary goals included attainment of employment and wages received through employment opportunity. The assumption is that employment and receipt of wages are significantly related to reduced recidivism through education.

Rationale for Study Methodology

Correctional education has shown potential to be a great step forward in the reduction of recidivism; however, correctional education, by itself, is inadequate as a predictor of success or failure while on parole or after release. A review of the literature strongly suggests that the essential factors of social intervention (education), personal intervention (social bond), and economics (income) will greatly increase the ability to predict recidivism rates and future criminal activity. These three variables, used in conjunction with each other, should be better predictors of future behavior than either one separately. It is therefore only reasonable that these possible predictors be tested empirically.

Research Questions and Hypothesis

Today's system of corrections rehabilitation and reform gives primary emphasis to the current offense and somewhat less emphasis on the individual and the individuals needs. Empirical research is needed to determine how best to use personal as well as criminologically relevant information to aid in identifying
offenders who have high rates of offending after release from prison. Regardless of one's policy preferences about selective incapacitation, developing knowledge about criminals and criminal careers should be an important objective of research in criminology and education. There only remains then the technical question of how much the current literature can aid in guiding more efficient research and theory development in correctional education.

It is hypothesized that the three variable model suggested in this dissertation will increase the predicative efficiency of recidivism. The function of this study therefore, is to examine on a more comprehensive scale the relationships between an inmate's education, social bonds, post-release income, and recidivism.

If research has shown that education is one of the most effective forms of crime prevention (Haigle et al., 1994; Harer, 1994; Sherman et al., 1994; Taylor, 1993; and that unemployment is an important determinant of crime (Chiricos, 1987; Genevieve, Margolies, & Muhlin, 1985; Hale and Sabbagh, 1991), then these two variables should be major predictors of recidivism and post-release outcome. In addition, if we included those studies devoted to the social bond of inmates as individuals (Hirschi, 1969; Reitsma-Street & Zager, 1986; Sutherland & Cressey, 1978), practical application of behavioral categories (Quay,
1979), Conceptual Level Matching Model (Harvey, Hunt, & Schroder, 1961), Interpersonal Maturity Level -I-Level - (Warren, 1969), the Minnesota Multiphasic Personality Inventory (Megargee & Bohn, 1979), and Moral Development (Kohlberg, 1969), as well as studies involving locus of control and health (Wallston and Wallston, 1978), locus of control and drugs (Olton, 1985), and locus of control and personal adjustment (Fleming and Spooner, 1985), a more comprehensive model could be developed with only three constructs as independent variables: education, the social bond, and income.

Based on the propositions presented in chapter I, the expected relationships discussed in chapter II, and the reasoning and rationale indicated above, the following general hypothesis are presented for empirical validation using meta-analysis methodology. These broad hypotheses concern both the theories presented and contexts drawn from the literature. Since each study to be analyzed was developed with its own set of theories and hypothesis, those being presented here provide a backdrop rather than a final set of research tools.

**Hypotheses**

**Hypothesis 1** - A more intense engagement with an academic program will result in a greater degree of impact and lead to changes or processes of individual/social development that will inhibit a return to criminal activity.
Hypothesis 2 - Higher education programs will have a particularly powerful impact on inmates who are new to cognitive development or creative thinking or who for other reasons feel disengaged from the dominant culture.

Hypothesis 3 - For individuals with poor educational backgrounds and from families with little or no experience with higher education, even modest academic success within the prison education program will result in significant growth in self-esteem and improve chances of success after release.

Hypothesis 4 - The existence of a vibrant learning community as opposed to the mere offering of courses will significantly enhance the impact of the educational program.

Hypothesis 5 - Broad exposure to the liberal arts will better serve students in prison education than an early concentration in one discipline.

Hypothesis 6 - A biography which predisposes one to desire or need identification with a criminal subculture will be resistant to any changes in attitude or life plan.

Meta Analysis Methodology

This study addresses the limitations of prior recidivism research by subjecting the literature on correctional education to a meta-analysis. The narrative literature review method used by most research scholars can be informative, but is not the optimal method of integrating research findings (Hunter, Schmidt, & Jackson, 1982; Glass, 1976). As an alternative approach to the traditional narrative literature review, meta-analysis is "the application of statistical procedures to collections
of empirical findings from individual studies for the purpose of integrating, synthesizing, and making sense of them" (Niemi, 1986, p.5). The unit of analysis in meta-analysis, and therefore this dissertation, is the independent study.

The Glassian (1976) and the Hunter and Schmidt (1990) methods of meta-analysis will be utilized throughout this study. These methods are based on the idea that much of the variation in results across studies is due to statistical and methodological artifacts rather than to substantive differences in underlying population relationships. It has been proven (Callender & Osburn, 1980; Hunt, Schmidt, & Jackson, 1982; Pearlman, 1979; Raju & Burke, 1983; Schmidt & Hunter, 1977) that some of these artifacts reduce the correlation's (or effect sizes) below their true population values. The proposed methods determine the variance attributable to sampling error and differences between studies in reliability and range restriction and subtracts that amount from the total amount of variation, yielding estimates of the true variation across studies and the true average correlation (or effect size).

**Effect Size Estimates**

The effect-size measure utilized in this investigation will be both the Pearson product-moment correlation coefficient and the partial correlation coefficient.
Partial correlation will be used as a measure of education effect because it provides the magnitude and direction of the association between two variables (education participation and recidivism), while controlling for a third, and it is equivalent to the Pearson product-moment correlation coefficient.

A valuable characteristic of effect size is that it can be translated into the Binomial Effect Size Display (BESD, Rosenthall, 1991). A Binomial Effect Size Display converts the statistic into a value that reflects the difference between the recidivism rates of the treatment group and the control group (assuming a base rate of recidivism of 50 percent and an equal number of cases in each group). For example, using the BESD, a mean correlation coefficient of .20 translates into a recidivism rate of 40 percent for the treatment group (50% - [20/2]) and a corresponding recidivism rate of 60 percent for the control group (50% + [20/2]).

It should be noted that the analyses will be conducted on the weighted effect-size estimates. Both weighted and unweighted effect-size estimates are often reported in the literature. This study will use the weighted estimates for several reasons. Most importantly, the least-square approaches that can be conducted on the adjusted estimates allow for a more sophisticated and effective exploration of
the proposed hypotheses. For example, several potential moderating variables may be identified, and their independent and joint contributions to effect size can be determined.

During the final analysis of meta-analytic results it often becomes obvious that the overall effect size calculations are being affected by large studies (positively or negatively). In those cases, a separate set of statistics are calculated using the weighted effect-size to compensate for this result.

Since the results of the weighted effect-size calculations provide a more realistic relationship between the variables of interest, the unweighted effect-size calculations are being omitted from the final analysis. Therefore a separate set of statistics are not calculated on the unweighted values.

As previously mentioned, the effect-size measure utilized in this investigation will be both the Pearson product-moment correlation coefficient and the partial correlation coefficient.

However, not all studies report the same statistic, therefore a common statistic must be derived from the available data source or sources. The next section will cover this translation from study statistic to analysis statistic.
Converting Study Statistics to Effect Sizes

Once the data base (prison education program studies) was assembled for this dissertation each individual study statistic was converted to a common metric (r) for further analysis and accumulation. The following formulas were used for converting the individual study statistics to (r) (Glass, McGaw, & Smith, 1981; Hunter, Schmidt, & Jackson, 1982).

1) Converting (t) to (r):

\[ r = \sqrt{\frac{t^2}{t^2 + df}} \]

Note: Can be used with either paired or unpaired t test

2) Converting (F) to (r):

\[ r = \sqrt{\frac{F}{F + df(e)}} \]

Note: Used only with one way ANOVAS

3) Converting (F) Two-way ANOVA to (r):

\[ r = \sqrt{\frac{(Fa \cdot dfa)}{(Fa \cdot dfa) + (Fb \cdot dfb) + (Fab \cdot dfab) + df(e)}} \]
Notes:
$F_a$ = Main Effect of Interest
$df_a$ = df for A
$F_b$ = Second Main Effect
$df_b$ = df for B
$F_{ab}$ = Interaction effects
$df_{ab}$ = Interaction df
$df(e)$ = error df

4) Converting $(X^2)$ to $(r)$:

$$r = \sqrt{\frac{X^2}{N}}$$

5) Converting Cohen's $(d)$ to $(r)$:

$$r = \sqrt{\frac{d}{d^2 + \frac{4(N-2)}{N}}}$$

6) Converting $(p)$ to $(r)$:

a) Convert the 2 tailed $p$ value into a one tailed $p$ (i.e., $p/2$)

b) Look up the associated $Z$ in a normal probability table.

96
The Research Design

A synthesis of research about the effects of correctional education on recidivism has been hampered by contradictory findings and by the methodological problems which appear in many studies. This dissertation carried out a meta-analysis on the corrections education literature in an effort to determine whether differences in recidivism rates can be attributed to true educational attainment, differences in personal attributes, differences in programs, differences in institutional structures, or differences in research methods.

From a basic meta-analysis design standpoint, this investigation is a fixed-effects model (see Hedges, 1997). This type of design is both the simplest and most widely used statistical model in meta-analysis. A Fixed-effects model concept treats the effect size parameters as if they were fixed quantities. The parameters may differ across studies, but such differences are not thought of as a consequence of chance.

The simplest fixed effect model treats all studies as having the same effect size parameter $\theta_1 = \theta_2 = \ldots \theta_k$. However, there is an alternate approach that is used in this study where the effect size parameters $\theta_1, \ldots, \theta_k$ are considered a linear function of the study characteristics. For example, the effect size can be taken as a function of
duration or intensity of the education program. In this case models can be used to test whether studies with short duration or low intensity have smaller effect sizes than studies of long duration or high intensity. The fixed-effects model makes strong assumptions about the data, of most concern here is that between-study variations in effect size parameters are not the consequence of random processes.

**Selection of Studies and Controls**

Studies selected for inclusion in this meta-analysis possess at a minimum the following characteristics:

1) The study is composed of incarcerated adult offenders. Community release programs and work release programs were considered for this analysis.

2) The study must include a follow-up period. If several follow-up periods are reported data from each follow-up period was used as a separate entry to ensure the maximum utilization of the data.

3) The study compared a group of offenders who received some form of education intervention to a control group who did not receive the primary intervention. Individual control groups could have received a diluted form of the treatment program and could have even received alternate services as long as these services could be differentiated from those received by the treatment group.

4) A measure of recidivism was included in the study. Recidivism was defined in several ways. Acceptable definitions include rearrest, reconviction, and parole failures or revocations.
5) The study must have been conducted in the United States and/or Canada. A significant number of studies were conducted in Canada; this will become a variable for further analysis.

6) The study and report must have been conducted and reported after 1980.

Studies that did not meet the above minimum standards were excluded from this meta-analysis. Any studies that were considered significant by the discipline either because of the population studied or the investigators' reputation that were not included in this meta-analysis are identified and discussed in the final chapter.

Study Sample

Since the intent of this study is to measure the impact of correctional education rather than the effect of education more generally, the sample was limited to studies conducted on prison education programs. A search of dissertation abstracts, ERIC files, Social Science Index, Education Index, Index of Criminal Justice, on-line resources, corrections education specialist, and previous literature reviews was conducted. 238 potential studies on correctional education and recidivism were located; however, only 124 studies met the criteria outlined for this study.

Following the convention proposed by Glass (1978), each distinct sample of inmates/students was identified and entered as a separate line item in a computer-readable
file. For example, a single research study might contain a number of separate samples: students of different ages, students of different races, students who have been segregated in prison for different periods of time, or students whose achievement was monitored by means of different methodologies.

The effect of education on recidivism is defined as the increase in duration of release attained by correctional education students beyond that which was obtained by a control group which did not participate in correctional education program.

In addition it is believed that education is a moderating variable between income and recidivism. Therefore, this study compares correctional education students to control groups, which are usually a group of inmates from the same institution not receiving correctional education. In some studies the control group is a group of inmates from a national norming sample.

Although the studies were expected to vary greatly in quality, it was decided to discard two additional types that met the original selection criteria: (1) some studies are simple cross-sectional comparisons of test scores of inmates at time of release. There is no reason to believe that the two groups are similar; (2) Studies in which a
true educational component of the program could not be identified were also eliminated.

It was necessary to insure that only one effect size was contributed to the overall analysis of a single program and a single group of inmates. Numerous articles or reports have been written about a single program. Each of the diverse articles might relate different information about the same program such as results for different testing periods, details about the program content, and instrumentation. To insure independence of the sample, and studies, all authors and institutions were cross-checked against each other in the database to identify duplicate reports on the same study during the same time period.

Data Collection and Coding Procedures

Based on the selection criteria established above correctional education studies conducted after 1980 were collected from five disciplines: education, psychology, sociology, economics, and social work. This interdisciplinary approach provided tangible, replicable, and useful information concerning the extent to which the overall goals and objectives of adult corrections education are being met.

Coding Procedures

A code book was compiled that included all variables identified in the studies that are related to: (a)
educational components; (b) participant characteristics (e.g., grade, gender, ethnicity, number of prior incarcerations); (c) program characteristics (e.g., year conducted, source of funding, source of publication, location, number of inmates involved, type of institution); (d) implementation factors (e.g., intensity, duration, program segregation, job placement); (e) research methodology (e.g., sampling, assignment, unit of assignment, type of control group, research design); (f) data analysis (e.g., unit of data analysis, method of effect size calculation, significance level, statistical power). Appendix "C" of this dissertation contains a complete listing of all variables utilized in this investigation along with operationalized definitions for each. Appendix "D" contains a sample of the coding reference sheets used by the three reviewers.

In coding the studies, the main focus was on gaining as much information as possible about the programs, the evaluation, and the methods utilized. When important information was missing in the primary report or ambiguities needed clarification, the original researcher was contacted for clarification.

A code book was developed as outlined above and all content items independently coded by this author. Two additional research associates, one from sociology and one
from social-work, also coded the studies independently. The efforts of the three independent coders were analyzed for overall agreement. Chi-squares and Pearson correlation coefficients were calculated to determine inter-rater-reliability of the coded data. For the most part, agreement was calculated between dichotomous variables; some variables required three or four levels of analysis.

Overall agreement was high at 94.7% \((r = .89)\). Year of the study had the highest agreement \((100\%, r = 1.0)\) and design methodology had the lowest agreement at 83.3% \((r = .58)\).

All variables falling below an agreement rate of 85% were reviewed by all three reviewers together to determine the area or areas of disagreement. Once the disagreements were discussed and reviewed a consensus was developed between the three independent coders and the final group decision was incorporated into the study.

**Analysis of the Data**

A program or study is the unit of analysis. In meta-analysis, studies are most often the unit of analysis with one effect size being reported per study \((\text{Bangert-Drowns, 1986})\). However, in corrections education program research, some studies compared the efficacy of more than one type of program or group of individuals. In
those cases the type of program was the variable of interest, as well as the total for all programs; using the study as the unit of analysis would not allow comparisons about the types of programs. For example, a cognitive program, a decision making program, and a values-clarification program were compared in a single study reported by Goodstadt and Sheppard (1983). The three different types of education programs were administered to independent groups of inmates, thereby contributing three effect sizes, one for each program type.

The analysis of data in this study was divided into three major sections. The first section was devoted primarily to descriptive statistics and measures of central tendency. In most cases, these data are presented for the total sample as well as for each comparison group identified in the studies. This mandated the selection of special subsets once the data base was fully assembled and is covered in greater detail in the analysis chapter.

The selection of special subsets was made for several reasons. The first reason is to replicate the results with a set of studies that are a true mix of the studies reported and compare this to a subset of studies employing different methodology. For example, many researchers feel that results of programs evaluated with quasi-experimental research designs yield overestimates of program effects;
therefore, the analysis of a set of experimental studies, the analysis of a set of quasi-experimental studies, and the analysis of the two groups mixed will empirically examine this question.

Second, as factors other than random or nonrandom assignment can impact evaluation results it is desirable to examine the impact of some of these factors. Factors could include the year the study was conducted, the funding agency, the occupation of the principal investigator, the location of the institution, security level of the institution, and type of report.

The second section of analysis was used to ascertain what specific relationships might exist between the independent variables and varying recidivism rates of offenders throughout the studies sampled. The third section of analysis is used to ascertain if the relationships found in section two are consistent across different comparison groups.

In addition to the procedures and sections mentioned above, the data were analyzed to meet the objectives of this study as outlined in chapter I and to test the hypotheses presented at the beginning of this chapter.

Two types of primary statistical analysis were used for hypothesis testing in this study. The first is logistic regression, which was used for the testing of the
predicative ability of the model. The second analysis is an analysis of variance, or ANOVA which will be used to compare subgroups and subsets.

Logistic Regression

Predicting whether or not an event will occur and identifying those variables that are important in making the prediction is important from a theoretical and an applied point of view. There are a variety of multivariate statistical techniques that can be used to predict a dichotomous dependent variable from a set of independent variables. OLS multiple regression, logistic regression, and discriminant analysis are several of the techniques that are available. However, difficulties are encountered when the dependent variable can only have two values, some of which are addressed below.

The assumptions necessary for hypothesis testing in OLS regression analysis are violated when the dependent variable can have only two values. The violation of the assumptions leads to several problems: 1) It is unreasonable to assume that the distribution of errors is normal, and 2) The multiple regression analysis values cannot be interpreted as probabilities because they are not constrained in the interval between 0 and 1.
Another form of analysis that is at times used is discriminant analysis; however, according to Dantzker et al. (1998):

Linear discriminant analysis does allow direct prediction of group membership, but the assumption of multivariate normality of the independent variables, as well as equal variance-covariance matrices in the two groups, is required for the prediction rule to be optimal (p.187).

The conditions required for discriminant analysis cannot be met for this study; therefore, it will not be considered. Because OLS values cannot be interpreted as probabilities it too was not considered until the final analysis. Therefore, logistic regression appears to be the most viable statistical method available to do the analysis of the data collected for this study. Logistic regression allows for the direct estimation of the probability of an event occurring (recidivism), while requiring far fewer assumptions than other methods. Even when the assumptions required for discriminant analysis are met, logistic regression still performs well (Hosmer and Lemeshow, 1989).

In conclusion, the use of logistic regression has advantages over other types of statistical analysis. However, for this study the two most important advantages are that in this case the analysis fits the data and the product of the mathematical process provides the
correctional practitioner with the probability of an event (recidivism) taking place.

**ANOVA**

The second type of statistical analysis used in this study involves a simple test of significance. The goal of the analysis is the determination of whether or not the sample means of the different groups (i.e., inmate completers, non-completers, and control) come from the same rather than different populations. For this study a One-way analysis of variance was utilized. An ANOVA asks what proportion of the total variation in dependent variable Y can be attributed to individual i’s membership in a specific group. The different group means of income, education, and the social bonds were tested using this statistical procedure. As well as any other subsets and subgroups identified.

This section has provided a description of the data utilized in this investigation; the sampling technique; the research design; a description of the meta-analysis format; and the final analysis procedures. In the next chapter data analysis and the findings of this investigation are presented.
CHAPTER V
DATA ANALYSIS

This chapter contains the results of the data analysis for this dissertation and is separated into five sections. The first section contains descriptive information on the study sample and associated variables. The second section contains important bivariate correlations between study variables. Section three contains the results from the meta-analysis, generation of effect sizes, and associated meta-analysis test of significance. The fourth section is the regression section. This section utilizes analyses to examine the relative contribution of variables in explaining variance among recidivist and recidivism rates. Section five presents the details and results of various test of significance along with ANOVAs between effect sizes, education levels, program types, institutional variations, and individual demographics. The fifth and final section is a summary of the analyses and contains narratives pertinent to hypothesis testing.

Descriptive Statistics

The final sample of studies for this meta-analysis consisted of 124 studies identified as suitable and meeting the criteria established in Chapter IV of this dissertation. These 124 studies generated 329 effect sizes related to correctional education and recidivism. A total of 238 studies were reviewed for this investigation. Those
studies not included in the final analysis were excluded for a variety of reasons: 35 studies did not meet the basic criteria established in Chapter IV of this dissertation; 29 studies were eliminated for insufficient information for inclusion; and key variables of 20 studies could not be verified.

Table 1 provides basic descriptive statistics for all continuous variables, including minimum values, maximum values, means, and standard deviations.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>S. D.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age - Control</td>
<td>25.69</td>
<td>4.78</td>
<td>17.00</td>
<td>40.00</td>
</tr>
<tr>
<td>Age - Treatment</td>
<td>24.91</td>
<td>4.83</td>
<td>17.00</td>
<td>40.00</td>
</tr>
<tr>
<td>Completion %</td>
<td>.6520</td>
<td>.1261</td>
<td>.110</td>
<td>1.00</td>
</tr>
<tr>
<td>Effect Size</td>
<td>.5978</td>
<td>.2652</td>
<td>-.4481</td>
<td>2.577</td>
</tr>
<tr>
<td>Population</td>
<td>738.86</td>
<td>679.76</td>
<td>40</td>
<td>16000</td>
</tr>
<tr>
<td>Recidivism Reduction %</td>
<td>.2887</td>
<td>.1754</td>
<td>-.05</td>
<td>1.0</td>
</tr>
<tr>
<td>Study Significance</td>
<td>.00228</td>
<td>.00312</td>
<td>-.0831</td>
<td>.0901</td>
</tr>
</tbody>
</table>

(N = 329)

The age of participants included in the analysis ranged from a low of 17 to a high of 40 years old. The mean age of the control and treatment groups combined was 25.3 years. As can be seen in Table 1, sample and population sizes varied in the studies. The mean study size was 738 inmates with studies ranging from a low of 40 to a national...
study involving 16000 inmates. Significance level varied among the studies with an average significance level being in the .002 range.

Success of many correctional education programs is often based on completion rates. Over all the meta-analysis revealed that 65.20% of all inmates who started education programs completed them. The range varied from a low of 11% completion for one program to a high of 100% completion for several programs.

The overall effect size for this meta-analysis is .5407 which is considered strong (see Hedges & Olkin, 1982) with a standard deviation of .2652. The range of effects ran from a low of -.4481 to a high of 2.577. A more detailed analysis and discussion of overall effect sizes and their importance is included in the analysis section four of this chapter. The impact of education on overall recidivism produced a standardized reduction of .2887 (28.87%) with a standard deviation of .1754 (17.54%).

Many variables in this study are not continuous but rather discrete non-orderable, discrete orderable, or dichotomous. The next table of this series, Table 2, provides data and statistics on three discrete orderable variables that are included in the study. As shown in this table, a large percentage of studies included in this analysis (50, 40.4%) was methodologically moderately strong.
Only eight (6.4%) studies were found to have no scientific value. All eight of the studies with no scientific value were originally quantitative in nature; however, the final reports that were issued were more qualitative or narrative and therefore provided very little quantitative significance.

Table 2  
Descriptive Statistics for Discrete Orderable Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid %</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method Strength</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong</td>
<td>29</td>
<td>23.4</td>
<td>26.1</td>
<td>26.1</td>
</tr>
<tr>
<td>Moderate</td>
<td>50</td>
<td>40.4</td>
<td>45.1</td>
<td>71.2</td>
</tr>
<tr>
<td>Weak</td>
<td>24</td>
<td>19.5</td>
<td>21.7</td>
<td>92.9</td>
</tr>
<tr>
<td>No Scientific Value</td>
<td>8</td>
<td>6.4</td>
<td>7.1</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>13</td>
<td>10.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recidivism Period</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-6 Months</td>
<td>16</td>
<td>13.1</td>
<td>13.1</td>
<td>13.1</td>
</tr>
<tr>
<td>7-12 Months</td>
<td>27</td>
<td>22.7</td>
<td>22.7</td>
<td>35.8</td>
</tr>
<tr>
<td>13-24 Months</td>
<td>21</td>
<td>16.7</td>
<td>16.7</td>
<td>52.5</td>
</tr>
<tr>
<td>&gt;-24 Months</td>
<td>58</td>
<td>47.5</td>
<td>47.5</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study Strength</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Significant</td>
<td>87</td>
<td>70.5</td>
<td>78.6</td>
<td>78.6</td>
</tr>
<tr>
<td>(+) Not Significant</td>
<td>10</td>
<td>8.2</td>
<td>9.2</td>
<td>87.8</td>
</tr>
<tr>
<td>(-) Significant</td>
<td>4</td>
<td>2.1</td>
<td>2.4</td>
<td>90.2</td>
</tr>
<tr>
<td>(-) Not Significant</td>
<td>6</td>
<td>4.9</td>
<td>5.4</td>
<td>95.6</td>
</tr>
<tr>
<td>Neutral</td>
<td>5</td>
<td>4.0</td>
<td>4.4</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>12</td>
<td>10.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(N = 124)
Length of the study, or the recidivism period, varied among the studies in this meta-analysis. The shortest study observed recidivism rates during the first three months after release; the longest study surveyed recidivism over a period of ten years. The mean recidivism period of all studies was 18 months. However, the mode, as can be seen in Table 2, is greater than 24 months.

Most quantitative research reports indicate some significance level of the overall study. Eighty-seven (70.5%) of the studies in this analysis were significantly positive at the $p < .05$ level. Ten (8.2%) were positive, but not significant. Ten (8.2%) had negative results, but only four (2.1%) were significant. Five studies (4%) were neutral, showing neither positive or negative results.

Table 3-A provides data and statistics on discrete non-orderable variables that were included in the study. The first variable in Table 3-A is related to the discipline of the principle investigator. The data reveal that almost 41% of all studies were conducted by investigators from criminal justice. The second highest group consisted of principle investigators from education (22.2%), followed by psychology (9.7%), sociology (6.4%), and social work (4.3%).

The type of document in which the final report was published also varied. Sixty-nine studies (55.9%)
Table 3A
Descriptive Statistics for Discrete Non-Orderable Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid %</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline of PI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>27</td>
<td>22.2</td>
<td>25.3</td>
<td>25.3</td>
</tr>
<tr>
<td>Sociology</td>
<td>9</td>
<td>6.4</td>
<td>7.3</td>
<td>32.6</td>
</tr>
<tr>
<td>Social Work</td>
<td>6</td>
<td>4.3</td>
<td>4.9</td>
<td>37.5</td>
</tr>
<tr>
<td>Psychology</td>
<td>12</td>
<td>9.7</td>
<td>11.1</td>
<td>48.6</td>
</tr>
<tr>
<td>Criminal Justice</td>
<td>50</td>
<td>40.7</td>
<td>46.5</td>
<td>95.1</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>4.3</td>
<td>4.9</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>15</td>
<td>12.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer Journal</td>
<td>69</td>
<td>55.9</td>
<td>55.9</td>
<td>55.9</td>
</tr>
<tr>
<td>Government Doc</td>
<td>22</td>
<td>17.7</td>
<td>17.7</td>
<td>73.6</td>
</tr>
<tr>
<td>Agency Report</td>
<td>12</td>
<td>9.7</td>
<td>9.7</td>
<td>83.3</td>
</tr>
<tr>
<td>Dissertation/thesis</td>
<td>9</td>
<td>7.0</td>
<td>7.0</td>
<td>90.3</td>
</tr>
<tr>
<td>Trade Journal</td>
<td>12</td>
<td>9.7</td>
<td>9.7</td>
<td>100</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>108</td>
<td>86.4</td>
<td>86.4</td>
<td>86.4</td>
</tr>
<tr>
<td>Female</td>
<td>16</td>
<td>13.6</td>
<td>13.6</td>
<td>100</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2</td>
<td>1.5</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Black</td>
<td>6</td>
<td>4.9</td>
<td>5.7</td>
<td>7.4</td>
</tr>
<tr>
<td>Mixed</td>
<td>98</td>
<td>79.3</td>
<td>92.6</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>18</td>
<td>14.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(N = 124)
were found in peer reviewed journals. Twelve studies (9.7%) were found in agency reports and trade journals; government documents supplied twenty-two studies (17.7%); and dissertations and theses supplied nine studies (7.0%).

The relationship between gender and study representation is consistent with gender populations in American corrections. One-hundred-eight studies (86.4%) were conducted using males and sixteen (13.6%) were conducted using females. However, only four studies (3.2%) were conducted exclusively on females. In twelve studies (9.6%) females were included with a male population sample.

Race is the last variable to be addressed in Table 3-A. As observed in this table, investigations where the race populations were mixed comprised ninety-eight studies and represented 79.3%. Only two studies (1.5%) were exclusively White, while six studies (4.9%) were exclusively Black. Even though other minorities were often represented in many of the studies, the representation was too small for inclusion as a separate group in the final analysis; therefore the data were not available for inclusion in this meta-analysis.

Table 3-B is a continuation of the non-orderable discrete variables included in this study. This table includes the location of the study, population type, and type of agency conducting the study.
Table 3-B  
Descriptive Statistics for Discrete Non-Orderable Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid %</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location of Study</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North East</td>
<td>27</td>
<td>21.6</td>
<td>23.1</td>
<td>23.1</td>
</tr>
<tr>
<td>South East</td>
<td>14</td>
<td>11.2</td>
<td>12.0</td>
<td>35.1</td>
</tr>
<tr>
<td>North Central</td>
<td>13</td>
<td>10.9</td>
<td>11.7</td>
<td>46.8</td>
</tr>
<tr>
<td>South Central</td>
<td>18</td>
<td>14.6</td>
<td>15.6</td>
<td>62.3</td>
</tr>
<tr>
<td>North West</td>
<td>9</td>
<td>6.4</td>
<td>6.8</td>
<td>69.2</td>
</tr>
<tr>
<td>South West</td>
<td>13</td>
<td>10.3</td>
<td>11.0</td>
<td>80.2</td>
</tr>
<tr>
<td>National</td>
<td>11</td>
<td>9.1</td>
<td>9.7</td>
<td>89.9</td>
</tr>
<tr>
<td>Canada</td>
<td>11</td>
<td>9.1</td>
<td>9.7</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>8</td>
<td>6.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Population Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult Male</td>
<td>76</td>
<td>61.1</td>
<td>69.8</td>
<td>69.8</td>
</tr>
<tr>
<td>Adult Female</td>
<td>12</td>
<td>9.4</td>
<td>10.8</td>
<td>80.6</td>
</tr>
<tr>
<td>Mixed Male/Female</td>
<td>10</td>
<td>7.9</td>
<td>9.0</td>
<td>89.6</td>
</tr>
<tr>
<td>Juvenile &gt; 17</td>
<td>11</td>
<td>9.1</td>
<td>10.4</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>15</td>
<td>11.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Study Agency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>41</td>
<td>33.1</td>
<td>37.3</td>
<td>37.3</td>
</tr>
<tr>
<td>Government</td>
<td>27</td>
<td>21.9</td>
<td>24.7</td>
<td>62.0</td>
</tr>
<tr>
<td>Penal</td>
<td>20</td>
<td>16.4</td>
<td>18.5</td>
<td>80.5</td>
</tr>
<tr>
<td>Consultant</td>
<td>20</td>
<td>16.4</td>
<td>18.5</td>
<td>99.0</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>0.9</td>
<td>1.0</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>14</td>
<td>11.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(N = 124)

The first variable to be considered in Table 3-B is location of study. The data reveal that twenty-seven studies were conducted in the North East representing
21.6%. The South Central region followed with eighteen studies representing 14.6% of the meta-analysis data base. All remaining regions of the country were evenly distributed between nine studies (6.4%) to fourteen studies (11.2%). Eleven studies were conducted nationally, and eleven were conducted in Canada, representing 9.1% each or approximately 20% of the total data base. Appendix A contains a map of regions states included in each region.

Population type is the second variable reflected in Table 3-B. Even though population type refers to gender, it represents the population type or gender of the primary institution where the study was conducted and not necessarily the gender of the study sample. Seventy-six studies (61.1%) were conducted in male institutions. Twelve studies (9.4%) were conducted in female institutions and ten studies (7.9%) were conducted in mixed male/female institutions. Eleven studies (9.1%) were conducted on male inmates over the age of seventeen housed in juvenile institutions. Studies of juveniles, male or female, below the age of seventeen were not considered for this meta-analysis.

The final variable reflected in Table 3-B is type of agency or institution conducting the study. Universities conducted forty-one studies, representing 33.1% of the data base. Government agencies not associated with penal
institutions conducted twenty-seven studies (21.9%). Penal institutions and professional consultants conducted twenty studies, each representing 32.8% of all studies conducted. Two studies (0.9%) were conducted by agencies not identified in the final report.

Table 3-C is the final table describing the remaining non-orderable variables used in this study.

Table 3-C
Descriptive Statistics for Discrete Non-Orderable Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid %</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Institution Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Security</td>
<td>71</td>
<td>50.8</td>
<td>57.6</td>
<td>57.6</td>
</tr>
<tr>
<td>Medium Security</td>
<td>34</td>
<td>24.3</td>
<td>27.6</td>
<td>85.2</td>
</tr>
<tr>
<td>Minimum Security</td>
<td>8</td>
<td>5.8</td>
<td>6.6</td>
<td>91.7</td>
</tr>
<tr>
<td>Prerelease</td>
<td>1</td>
<td>0.6</td>
<td>0.7</td>
<td>92.4</td>
</tr>
<tr>
<td>Community</td>
<td>9</td>
<td>6.7</td>
<td>7.6</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>0.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Program Funding</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State DOC</td>
<td>55</td>
<td>44.7</td>
<td>62.0</td>
<td>62.0</td>
</tr>
<tr>
<td>State DOE</td>
<td>2</td>
<td>1.8</td>
<td>2.5</td>
<td>64.6</td>
</tr>
<tr>
<td>Federal Grant</td>
<td>17</td>
<td>13.4</td>
<td>18.6</td>
<td>83.1</td>
</tr>
<tr>
<td>Local Government</td>
<td>14</td>
<td>11.6</td>
<td>16.0</td>
<td>99.2</td>
</tr>
<tr>
<td>Private</td>
<td>1</td>
<td>0.6</td>
<td>0.8</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>34</td>
<td>28.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(N=124)
The first variable to be discussed in Table 3-C is institution type. The data in Table 3-C indicate that seventy-one (50.8%) of the programs, and, therefore, the studies, were conducted in maximum security prisons. The second largest concentration was found in medium security prisons with thirty-four studies (24.3%). The smallest concentrations were found in community corrections, minimum security facilities, and prerelease programs with 6.7%, 5.8%, and 0.6% respectively.

Fifty-five (44.7%) studies were conducted on programs funded by state departments of corrections. Seventeen (13.4%) of the programs were funded by federal grants; fourteen (11.6%) were funded by local government; two (1.8%) were funded by state departments of education; and one (0.6%) was funded by a private agency.
The final variable to be considered in the discrete non-orderable category is study year. Study dates were collapsed into four time periods: early 80s, late 80s, early 90s, and late 90s. The early 90s saw the largest study concentration with forty-eight studies (38.3%) conducted between 1990 and 1994. This is most likely due to sudden Congressional interest in decreasing Pell Grants for prison inmates spurred by Senator Jessie Heilms in 1990. The late 90s continued the push in correctional education research and produced forty-six studies (38%) between 1995 and 1999. The early 80s was responsible for seventeen studies (13.4%) followed by the late 80s with 10.3%.

The last series of tables, Table 4-A and 4-B, provide basic descriptive statistics for all dichotomous variables utilized in this study. Table 4-A includes descriptive data for the variables Behavior Component, Test Control, Evaluation, and placement Assistance.

The first variable in the dichotomous variable grouping to be discussed in Table 4-A is Behavior Component. This variable indicates whether or not an education program includes a learning component related to social behavior and anger management. As the data in this table indicate seventy-five programs (60.2%) did not include a behavior component. However, twenty-eight (22.5%) of the programs did include a behavior component.
Table 4-A
Descriptive Statistics for Dichotomous Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid %</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Behavior Component</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td>75</td>
<td>60.2</td>
<td>72.8</td>
<td>72.8</td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td>22.5</td>
<td>27.2</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>21</td>
<td>17.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Test Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>14</td>
<td>10.9</td>
<td>12.5</td>
<td>12.5</td>
</tr>
<tr>
<td>Yes</td>
<td>95</td>
<td>76.3</td>
<td>87.5</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>15</td>
<td>12.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>84</td>
<td>67.5</td>
<td>75.3</td>
<td>75.3</td>
</tr>
<tr>
<td>Yes</td>
<td>27</td>
<td>22.2</td>
<td>24.7</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>13</td>
<td>10.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Placement Assistance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>68</td>
<td>54.7</td>
<td>62.1</td>
<td>62.1</td>
</tr>
<tr>
<td>Yes</td>
<td>41</td>
<td>33.4</td>
<td>37.9</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>15</td>
<td>11.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(N=124)

The variable Test Control indicates the inclusion of a true experimental control group within the study. As indicated in Chapter IV of this dissertation all studies must have included some type of control. However, some studies used national or state recidivism data in a post hoc fashion to measure success rates. Other programs measured success by including a control group from the same sample population. The Test Control variable in this
meta-analysis indicates whether or not the control group was drawn from the same sample population. The vast majority of the studies, ninety-five (76.3%), included in this meta-analysis utilized a test control group to compare against the selected treatment group. Fourteen studies (10.9%) used either national or state recidivism rates.

The next variable in Table 4-A is the Evaluation variable. Often studies are conducted on programs as part of a larger program evaluation component. This is often the case in government or Federal grants. Of the 124 studies included in this analysis, eight-four (67.5%) were not part of a larger evaluation project. However, twenty-seven (22.2%) were part of evaluation projects.

The last variable included in Table 4-A is Placement Assistance. This variable indicates whether or not the education program, usually vocational programs, included job placement assistance. As observed by the data in this table, sixty-eight programs (54.7%) did not include placement assistance; however, forty-one programs (33.4%) did include placement assistance.

Table 4-B is the last table in the descriptive statistics section and contains the variables, Population Segregation, Post Release Component, and Program Segregation.
Table 4-B
Descriptive Statistics for Dichotomous Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid %</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population Segregation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>70</td>
<td>56.8</td>
<td>74.2</td>
<td>74.2</td>
</tr>
<tr>
<td>Yes</td>
<td>25</td>
<td>19.8</td>
<td>25.8</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>29</td>
<td>23.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Post Release Component</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>80</td>
<td>64.4</td>
<td>76.3</td>
<td>76.3</td>
</tr>
<tr>
<td>Yes</td>
<td>25</td>
<td>20.1</td>
<td>23.7</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>19</td>
<td>15.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Program Segregation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>57</td>
<td>46.2</td>
<td>58.9</td>
<td>58.9</td>
</tr>
<tr>
<td>Yes</td>
<td>40</td>
<td>32.2</td>
<td>41.1</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>27</td>
<td>21.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(N = 124)

The variable Population segregation answers the question: Was the inmate segregated from the general prison population during the education program? Twenty-five programs (19.8%) provided population segregation during the inmate's education phase of incarceration. However, seventy programs (56.8%) did not provide population segregation.

The next variable included in Table 4-B is Post Release Component. After the inmate was released from prison were there professional services available as part of the education program? Again, twenty-five programs (20.1%) provided some form of after care or post release component. However, Eight programs (64.4%) did not include a post release component.
The final variable in this table, and, therefore, this section is Program Segregation. Was the education program itself segregated from the general prison population? The data indicate that forty (32.2%) of the programs included in this analysis were segregated from the general prison population. In contrast, fifty-seven (46.2%) were not segregated.

**Bivariate Correlations**

Before conducting test of significance and running high order regression models, bivariate correlation analyses were conducted between all study variables. Pearson product moment correlations were computed on each variable using individual effects generated from the 124 studies as the units of analysis. All variables were also analyzed for inter-correlations using Pearson product moment correlation coefficients. The complete results of this analysis are presented in the matrices contained within Appendix B. Variance inflation factors were computed along with regression models to test for multicollinerity and are also presented in Appendix B.

Table 5 is a condensed version of the correlations presented in Appendix B. For ease of interpretation, variables were organized into four groups: Program Correlations, Institutional Correlations, Individual Correlations, and Methods correlations. In this table each
variable is compared to the four main indicators related to education: Effect size, Recidivism Reduction Rate, Education Level, Program Success.

A review of this table indicates that the four groupings of variables all have inter-group variables that are moderate to strongly correlated with the main research objective variables. Analysis of variance and covariance were conducted on a number of variables; however, it is important to analyze the interrelationship of some of the main variables in the study before considering results of ANOVAs. Each of the four groups is discussed in detail below.

Program Correlations

The program correlation section of table 5 looks at the relationship of variables that are unique to the education program itself and to the main effect variables. The variable with the highest correlation to effect size is placement assistance (placcast), producing a positive .535 correlation, significant at the .0001 level. Course completion (couscomp) and post release component (postcomp) are the next two strongest correlations with effect size producing positive correlations of .396 and .376 respectively, also significant at the .0001 level.
Table 5
Main Variable Correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Effect Size</th>
<th>Recid-Reduce Rate</th>
<th>Education Level</th>
<th>Program Success</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program Correlations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>behvcomp</td>
<td>.125*</td>
<td>.138*</td>
<td>.133*</td>
<td>.138*</td>
</tr>
<tr>
<td>couscomp</td>
<td>.396**</td>
<td>.366*</td>
<td>.123*</td>
<td>.369**</td>
</tr>
<tr>
<td>placeast</td>
<td>.535**</td>
<td>.450**</td>
<td>.354**</td>
<td>.257**</td>
</tr>
<tr>
<td>popage</td>
<td>-.227**</td>
<td>-.170*</td>
<td>-.268**</td>
<td>-.229**</td>
</tr>
<tr>
<td>popseg</td>
<td>.277**</td>
<td>.142**</td>
<td>.245**</td>
<td>.176**</td>
</tr>
<tr>
<td>poptype</td>
<td>.149*</td>
<td>-.026</td>
<td>.163**</td>
<td>.019</td>
</tr>
<tr>
<td>postcomp</td>
<td>.376**</td>
<td>.222**</td>
<td>.041</td>
<td>.389**</td>
</tr>
<tr>
<td>progfund</td>
<td>-.103</td>
<td>-.082</td>
<td>-.187**</td>
<td>-.084</td>
</tr>
<tr>
<td>progsseg</td>
<td>.168**</td>
<td>.101*</td>
<td>.193**</td>
<td>.170**</td>
</tr>
<tr>
<td>typ prog</td>
<td>.114*</td>
<td>-.213**</td>
<td>.106</td>
<td>-.104</td>
</tr>
<tr>
<td><strong>Institutional Correlations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>instype</td>
<td>-.028</td>
<td>-.061</td>
<td>.446**</td>
<td>.085</td>
</tr>
<tr>
<td>location</td>
<td>-.033</td>
<td>-.051</td>
<td>.021</td>
<td>.023</td>
</tr>
<tr>
<td><strong>Individual Correlations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>age</td>
<td>-.294**</td>
<td>-.185*</td>
<td>.269**</td>
<td>-.209**</td>
</tr>
<tr>
<td>race (black)</td>
<td>.186**</td>
<td>.169*</td>
<td>-.103</td>
<td>.151*</td>
</tr>
<tr>
<td>gender (female)</td>
<td>.386**</td>
<td>.245**</td>
<td>.046</td>
<td>.265*</td>
</tr>
<tr>
<td><strong>Methods Correlations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>.103*</td>
<td>.183**</td>
<td>.030</td>
<td>-.030</td>
</tr>
<tr>
<td>disipln</td>
<td>.055</td>
<td>.030</td>
<td>.006</td>
<td>.024</td>
</tr>
<tr>
<td>doctype</td>
<td>-.040</td>
<td>-.133*</td>
<td>.061</td>
<td>-.097</td>
</tr>
<tr>
<td>eval</td>
<td>.174**</td>
<td>-.095</td>
<td>-.040</td>
<td>.162**</td>
</tr>
<tr>
<td>methatgh</td>
<td>.510**</td>
<td>.507**</td>
<td>-.094</td>
<td>.202**</td>
</tr>
<tr>
<td>siglvl</td>
<td>-.046</td>
<td>.014</td>
<td>.006</td>
<td>-.067</td>
</tr>
<tr>
<td>studyagcy</td>
<td>.056</td>
<td>.051</td>
<td>-.033</td>
<td>.072</td>
</tr>
<tr>
<td>studag</td>
<td>.358**</td>
<td>.399**</td>
<td>.006</td>
<td>.281**</td>
</tr>
<tr>
<td>year</td>
<td>-.047</td>
<td>-.089</td>
<td>.015</td>
<td>.005</td>
</tr>
</tbody>
</table>

* significant @ p .05
** significant @ p .000

Institutional Correlations

The grouping, Institutional Correlations, contains two variables: institution type (instype) and location of the institution (location). The single correlation that was
significant in this grouping was between institution type and education level, producing a positive .446 correlation significant at the .0001 level. This relationship is not surprising due to the fact that many institutions only have certain types of programs. For example many of the maximum security institutions have a full range of programs from literacy to higher education, while many of the smaller or minimum security institutions only have literacy or ABE programs.

**Individual Correlations**

The grouping of individual correlations reveals some interesting support for the theoretical perspectives outlined in chapter two of this dissertation. First, is the negative relationship between age and effect size. The data in Table 5 indicates a negative .294 correlation between age and effect size which is significant at the .0001 level. This indicates that as age increases the impact of correctional education on recidivism decreases. This relationship is in contrast to the normal crime/age curve and supports the hypothesis that education will have a significant impact on younger inmates. When age is correlated with education level, an inverse in the signs is seen; however, the magnitude of relationship and the significance level remain the same. This is not unusual in that there should be a positive relationship between age
and education level; as age goes up so does education level. These relationships will be explored further in the regression section and ANOVA section of this analysis.

The next variable that indicates support for the theories and hypothesis stipulated in this study is race. Again the data in Table 5 indicate a unique relationship between race and effect size. There is a positive .186 correlation which is significant at the .0001 level between African Americans and effect size. However, as the education level increases, the relationship sign changes and becomes non-significant. This most likely is due to the relationship between beginning education levels and race. For example, larger percentages of students in the literacy, ABE, and GED programs are African American, and larger percentages of students in higher education programs are White or European. This relationship will be explored in the regression section.

The last variable in the individual correlations section is gender. Here the data indicate a strong positive .386 correlation between women and effect size and again the relationship is significant at the .0001 level. The impact of correctional education is much greater than the impact seen in the male population and again supports the theoretical perspectives set forth in chapter two of this dissertation.
Methods Correlations

The last correlation grouping to be considered analyzes the correlations between educational outcomes and the methods used in the analyzed studies. The strongest correlations found were between the method strength of the studies (methstgh) and the outcome variables. As indicated in Table 5, there is a strong positive (.510) correlation between method strength and effect size which is significant at the .0001 level. Method strength is also strongly correlated with recidivism reduction and program success. This relationship should not be considered unique or unusual; strong methods should be able to indicate the true value of a program more reliably than a study with weak methods.

The next variable, study significance (studsig), was also positive and strongly correlated with effect size and recidivism reduction. Again this relationship should not be considered unique or unusual. A study with a strong positive significance level will generally be associated with either a study comprised of a large sample size or a large positive outcome.

Meta-Analysis and Study Effects

One hundred and twenty-four studies were identified as suitable for the meta-analysis. These studies generated three hundred and twenty-nine effect sizes between
correctional education and recidivism. Table 6 provides a summary of statistics generated by META, a meta-analysis statistical program provided by Dr. David Kenny University of Connecticut.

Table 6
Meta-Analysis Study Statistics

<table>
<thead>
<tr>
<th>Measured Variable</th>
<th>Computed Meta-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Number:</td>
<td>124</td>
</tr>
<tr>
<td>Total Sample Size:</td>
<td>93,981</td>
</tr>
<tr>
<td>Study Effects:</td>
<td>329</td>
</tr>
<tr>
<td>Mean Effect Size:</td>
<td>.5407</td>
</tr>
<tr>
<td>Effect Size sd:</td>
<td>.2652</td>
</tr>
<tr>
<td>Minimum Effect Size:</td>
<td>-.4481</td>
</tr>
<tr>
<td>Maximum Effect Size:</td>
<td>2.577</td>
</tr>
<tr>
<td>t-test of effect size - df 121:</td>
<td>6.1594 &amp; p&lt;.00001</td>
</tr>
<tr>
<td>Fail-safe N:</td>
<td>916</td>
</tr>
<tr>
<td>Average d:</td>
<td>.5596</td>
</tr>
<tr>
<td>Average r:</td>
<td>.3371</td>
</tr>
<tr>
<td>BSMD:</td>
<td>.3814 to .6186</td>
</tr>
<tr>
<td>Homogeneity of effect sizes:</td>
<td>$X^2 = 733.6350$</td>
</tr>
<tr>
<td>Significance of Homogeneity:</td>
<td>p &lt; .00001 df 121</td>
</tr>
<tr>
<td>Average Z:</td>
<td>25.7470 p&lt; .00001</td>
</tr>
</tbody>
</table>

Note: All Meta-Analysis statistics generated using META. A meta-analysis computer program written by David Kenny University of Connecticut.

The data in Table 6 indicates that the 329 study effects were based on a total sample size of 93,981 prison inmates. The mean Effect size was .5407 with a standard deviation of .2652. Effect size is a theoretical Z score with a range from -3.00 to +3.00. A study with no
difference between the treatment (education) and control would have an effect of 0. Any effect size greater than .50 is considered a major difference, and an effect size ranging from .25 to .50 is considered extremely important (Hedges & Olkin, 1982). The data presented in Table 6 indicates that the predictor category of education significantly predicted a reduction in recidivism and generated a t-test of effect size of 6.1594 significant at the p < .00001 level.

How strong is the relationship between education and recidivism established by the 124 studies analyzed? This meta-analysis generated a Fail-safe N of 916. The Fail-safe number represents the number of studies with a zero effect size that would be needed to make the results no longer statistically significant at the p < .05 two-tailed level. For this study, the results demonstrate that the relationship between education and recidivism is exceptionally strong.

A BSED (Binomial Effect Size Display) of .3814 to .6186 was generated from the data analyzed in this study. This procedure converts the statistic into a value that reflects the difference between the recidivism rates of the control group and the treatment group. As seen here, this meta-analysis indicated an overall reduction in recidivism produced by education of 61.65%.
The last statistic to be reviewed, and generated during the effect size analysis, is Homogeneity of effect size. The test of homogeneity evaluates whether the effect sizes significantly vary from study to study. To test the significance of the Homogeneity of effect size, a chi square test is utilized. For this study the \( \chi^2 = 733.6350 \) at \( p < .00001 \) with 121 degrees of freedom. In this case the chi square is significant. Therefore, the studies are not homogenous, and the measures of effect sizes differ because of factors other than sampling error. Generally, if the effect sizes are not homogenous, it is prudent to search for correlates to the effect sizes. This will be conducted in the following sections using ANOVA's and regression models to search for these correlates.

The results from the basic statistics generated by the meta-analysis confirm the expected theoretical relationships proposed in chapter two of this dissertation. It was predicted that as a change in behavior occurred due to the influence of education, the greater the likelihood of success after release from prison. From the statistics presented in Table 6, this prediction has been empirically validated. Further analysis will attempt to test the remaining hypothesis presented in Chapter four.

As a final verification of the relationship between education and recidivism, a scatter plot of effect size and
recidivism reduction was generated. Figure 1 below graphically illustrates this relationship.

Figure 1 shows a strong relationship between effect size (education) and recidivism reduction rate. The relationship is linear but slightly curvilinear. The Pearson Correlation is .766 and is significant at the p < .0001 level.

Logistic Regression Analysis

The first set of regression equations utilized in this section is logistic regression. The results of the logistic regression models will be reviewed in three parts. In the first model, recidivism is regressed on education. In the second model recidivism is regressed on education, age, and
sample population variables discussed previously in this dissertation. In the final model the effects of program variations and institution type are compared with the same model variables as the second: education, age, and sample population variables.

There are two products of the logistic regression analysis that are useful. The first is the measure of the success of the predictive model. This method generates a classification table in which the predicted outcomes are compared to the observed outcomes. The second useful product addresses the beta coefficients, which are placed in a regression formula. The suggested method of reviewing the results is to use scenarios. In a scenario, the value of each variable will be changed, while the remainder are held constant. The results of the model provide indications of success or failure; in this case recidiviate - not recidiviate. This method allows for a hypothetical case examination of the results. It should be noted that, while the significance of the individual variables is important, it is not as important as the validity of the total model.

A univariate analysis in which recidivism is regressed upon each independent variable is used in order to determine the strength of each independent variable separately. The results of this analysis are found in table
7 listed below. Tables containing the results of the zero order Pearson correlations are located in Appendix B.

Table 7
Univariate Analysis of the Effect of the Independent Variables on Recidivism

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\beta$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>.650</td>
<td>0.000</td>
</tr>
<tr>
<td>Education Level</td>
<td>.082</td>
<td>0.013</td>
</tr>
<tr>
<td>Effect Size</td>
<td>.325</td>
<td>0.000</td>
</tr>
<tr>
<td>Population Age</td>
<td>-4.100E-05</td>
<td>0.000</td>
</tr>
<tr>
<td>Population Type</td>
<td>-2.000E-02</td>
<td>0.059</td>
</tr>
<tr>
<td>Population Size</td>
<td>-.095</td>
<td>0.601</td>
</tr>
<tr>
<td>Placement Assistance</td>
<td>.407</td>
<td>0.000</td>
</tr>
<tr>
<td>Post Release Component</td>
<td>.117</td>
<td>0.021</td>
</tr>
<tr>
<td>Behavior Component</td>
<td>.160</td>
<td>0.000</td>
</tr>
<tr>
<td>Program Segregation</td>
<td>.074</td>
<td>0.002</td>
</tr>
<tr>
<td>Population Segregation</td>
<td>.096</td>
<td>0.037</td>
</tr>
<tr>
<td>Course Completion</td>
<td>.115</td>
<td>0.039</td>
</tr>
<tr>
<td>Gender</td>
<td>-.168</td>
<td>0.000</td>
</tr>
<tr>
<td>Race</td>
<td>.060</td>
<td>0.058</td>
</tr>
</tbody>
</table>

Note: Level of inclusion $p < .25$

Model 1 Recidivism on Education

The results of the logistic regression model (Table 8) in which recidivism was regressed on education indicates that education alone had an overall accuracy rate of 66.44% in predicting post release outcome (recidivism). As indicated in Table 8, education had a 88.52% accuracy rate in predicting success, but only a 28.30% accuracy rate in predicting failures.

These findings indicate that 34 of the cases predicted to fail actually succeeded, and that 25 of the cases...
predicted to succeed actually failed. For discussion purposes, each case in the meta-analysis data base will be considered as an individual incarcerated rather than a study of individuals. Using this as an example, these results indicate that from a public safety standpoint, 25 inmates might have been released into the community who presented a future danger to it. From an offender’s standpoint, 34 offenders succeeded who were not predicted to succeed.

Table 8
Education Prediction Accuracy

<table>
<thead>
<tr>
<th>Predicted Recidivate</th>
<th>Observed Recidivate</th>
<th>% Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Recidivate - No</td>
<td>184</td>
<td>34</td>
</tr>
<tr>
<td>Recidivate - Yes</td>
<td>86</td>
<td>25</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(N = 329)

The variation explained by education alone in this model is low ($R^2 = .133$). As mentioned previously, one of the advantages of logistic regression is the ability to predict the probability of success or failure based on the observed values. The beta coefficient for education is -.2016 and the constant for the model is .8275. When this information is plugged into a regression formula, the
resulting Z value is 0.2769. Based upon this information, two scenarios have been developed.

In the first scenario, an education score or level of 4 has been assigned, and in the second scenario, a value of 10 has been assigned. It should be remembered that it was hypothesized that the higher the education level, the greater the projected chance of success after release; conversely, the lower the education score, the less likely the individual is to succeed. Using just the score from education, the value of 4 suggests that the probability of recidivating is equal to .43. A score of 10 results in an individual probability of .087 of recidivating. This indicates that an offender scoring high on the education scale has a better projected chance of success after release. However, there does appear to be a high rate of error, particularly in the ability to predict failures. This tendency of the education score to err in predicting failure is to the disadvantage of public safety; however, it appears that the model's ability to predict success is high.

Model 2 Recidivism on Program Variables

In this model the variable recidivism is regressed on education, age, and sample program variables. The results show an overall accuracy rate of 86.16% (up from 66.44) in predicating recidivism. As indicated in Table 8-A, this
model had a 88.52% accuracy rate in predicting success and a 82.08% accuracy rate at predicting failure.

These findings indicate that 23 of the offenders predicted to recidiviate actually succeeded, and that 21 of the offenders predicted to succeed actually failed. The addition of the variables representing the elements of income (placement assistance) and community involvement (post release component) have added a significant amount of predictive accuracy. Although no percentage points were added to the accuracy of predicting success, 53.78 percentage points were added to the ability to accurately predict failure. The additional accuracy in predicting offenders who are likely to recidiviate has important ramifications for both public safety and rehabilitation. The variation explained by this model is moderately high ($R^2 = .729$).

**Table 8-A**

<table>
<thead>
<tr>
<th>Predicted</th>
<th>Recidivate</th>
<th>Recidivate</th>
<th>% Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Observed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recidivate - No</td>
<td>184</td>
<td>23</td>
<td>88.52%</td>
</tr>
<tr>
<td>Recidivate - Yes</td>
<td>21</td>
<td>99</td>
<td>82.08%</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td>86.16%</td>
</tr>
</tbody>
</table>

($N = 329$)
The analysis thus far indicates that the addition of age and program specific variables have resulted in a significant increase in predictive power. Although this is clear in the logistic regression, it is not clear as to whether the model would hold up when course completers, non-completers, and controls are compared. Therefore an additional statistical test, ANOVA, is suggested.

<table>
<thead>
<tr>
<th>Table 9 ANOVA</th>
<th>Completers, Non-Completers, and Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum of Squares</td>
<td>df</td>
</tr>
<tr>
<td>Education Level</td>
<td>Between Groups</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Program Variables</td>
<td>Between Groups</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Age</td>
<td>Between Groups</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
</tbody>
</table>

The results of the ANOVA, presented in Table 9, indicate a statistically significant difference between the three groups and the variables education and program variables. As indicated earlier, the addition of program type variables does add a significant amount of information to the interpretation of this study. Even though age added significantly in predicting recidivism, overall there does
not appear to be a significant difference between the three groups of inmates tested and age in these data.

The model presented, as a whole, has a considerable amount of explanatory power, and most of the individual variables are significant at the $p < .0001$ level. The beta coefficients are not high, but they are significant and in the expected direction (See Table 10).

### Table 10

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\beta$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>.719</td>
<td>0.000</td>
</tr>
<tr>
<td>Population Age</td>
<td>-.206</td>
<td>0.000</td>
</tr>
<tr>
<td>Placement Assistance</td>
<td>.856</td>
<td>0.000</td>
</tr>
<tr>
<td>Post Release Component</td>
<td>.567</td>
<td>0.021</td>
</tr>
<tr>
<td>Behavior Component</td>
<td>.714</td>
<td>0.000</td>
</tr>
<tr>
<td>Population Segregation</td>
<td>.589</td>
<td>0.037</td>
</tr>
<tr>
<td>Course Completion</td>
<td>.315</td>
<td>0.039</td>
</tr>
<tr>
<td>Gender</td>
<td>-.238</td>
<td>0.000</td>
</tr>
<tr>
<td>Race</td>
<td>.037</td>
<td>0.058</td>
</tr>
</tbody>
</table>

*Note: Level of inclusion $p < .25$*

In each model presented thus far in this study, the expected effect was achieved. The best method of summary for logistic regression is to compare the goodness of fit between the predicted and observed outcomes of the models. Logistic regression provides output for four tests of significance of the goodness of fit. Two of these tests are used here to summarize the findings: model Chi-squares and goodness of fit. Both methods test the current models...
against a perfect model given the variables utilized. The greater the level of significance for the model Chi-square, the closer the fit. For the goodness of fit approach, as the level of significance approaches 1, the greater the fit between the perfect model and the model being tested.

The model in which only the education variable was used to predict the recidivism outcome appears to have a close fit between the model tested and the predicted perfect fit (model chi-square = 29.613, df = 1, p = .0000). However, the chi-square value for the goodness of fit indicates a poor fit between the model tested and the perfect model (goodness of fit $X^2 = 14.36$, df = 8, p = .0728).

The second model is significantly more advanced. Here, there does appear to be a close fit between the model tested and the perfect model (chi-square = 219.95, df = 4, p < .0000). The strength of the model is revealed in the goodness of fit (goodness of fit = 2.26, df = 8, p = .9719).

In addition to the above indications of improvement in the power to predict recidivism outcomes, the ANOVA test indicated a highly significant increase in the amount of variance explained by the different groupings of education participants.
OLS Regression Analysis

After reviewing the data and results generated within the first and second series of logistic regression models, several questions were addressed. First, was the lack of association with some of the variables due to skewed distributions? If so, would data transformation clean up the models? Second, could a better model be developed with fewer variables? To address these questions several steps were taken. During phases one and two of the Logistic analysis, two variables were identified with skewed distributions: age and completion percentage. These data were transformed using the natural log function, resulting in a more normal distribution.

To address the second question regarding fewer variables, a third series of regression equations was computed using the Statistical Analysis System (SAS) backward stepwise OLS Regression procedures, along with the transformed data mentioned above (SAS, 1985).

The SAS procedure proceeds as follows: first, all independent variables were entered into the equation. Second, while the equations are processed the computer program drops the variable least closely associated with the desired outcome; all other variables are held constant. The process is repeated with the next least closely associated variable being dropped. The stepwise procedure
is continued until all remaining variables are significant at or above the standard .05 level of significance. This operation identifies the most consistent and significant variables that are associated with predicting the dependent variable (recidivism).

Tables 11 and 12 exhibit the results of the stepwise regression procedure for Recidivism Rate as the dependent variable. The overall change in adjusted R² is only .065 (.794 -.729); however, there is a reduction of five variables and an increase in the significance levels of several variables. There was no sign change.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>Std. Error</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.753</td>
<td>.568</td>
<td>.561</td>
<td>0.11809</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.812</td>
<td>.659</td>
<td>.648</td>
<td>0.10577</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>.869</td>
<td>.755</td>
<td>.743</td>
<td>9.04E-02</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>.878</td>
<td>.772</td>
<td>.756</td>
<td>8.79E-02</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>.891</td>
<td>.794</td>
<td>.777</td>
<td>8.42E-02</td>
<td>1.344</td>
</tr>
</tbody>
</table>

1 Predictors: (Constant), EDUCA, PLACCAST
2 Predictors: (Constant), EDUCA, PLACCAST, POSTCOMP
3 Predictors: (Constant), EDUCA, PLACCAST, POSTCOMP, BEHVCOMP
4 Predictors: (Constant), EDUCA, PLACCAST, POSTCOMP, BEHVCOMP, POPSEG
5 Predictors: (Constant), EDUCA, PLACCAST, POSTCOMP, BEHVCOMP, POPSEG

* all variables significant @ p < .000 with exception of popseg @ p < .05

The analysis thus far indicates that the addition of the various program variables has resulted in a significant increase in predicative power. Although this appears to be
the case from the regression models, a final test of significance between Model 2 and Model 3 is suggested.

This test of significance will be an F test, using the $R^2$ of each model. The formula utilized is:

$$F = \frac{(R^2_1 - R^2_2) / (k_2 - k_1)}{1 - R^2_1 / (N - k_1 - 1)}$$

Table 12: ANOVA:
Model Summary Stepwise Regression Recidivism Rate

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Sq</th>
<th>df</th>
<th>Mean Sq</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>15888.193</td>
<td>1</td>
<td>15888.193</td>
<td>197.613</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>23074.929</td>
<td>287</td>
<td>80.400</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>38963.121</td>
<td>288</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>19832.666</td>
<td>2</td>
<td>9916.333</td>
<td>148.249</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>19130.455</td>
<td>286</td>
<td>66.890</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>38963.121</td>
<td>288</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Regression</td>
<td>22135.462</td>
<td>3</td>
<td>7378.487</td>
<td>124.965</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>16827.659</td>
<td>285</td>
<td>59.044</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>38963.121</td>
<td>288</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Regression</td>
<td>22416.876</td>
<td>4</td>
<td>5604.219</td>
<td>96.191</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>16546.245</td>
<td>284</td>
<td>58.261</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>38963.121</td>
<td>288</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Regression</td>
<td>22416.876</td>
<td>5</td>
<td>5604.219</td>
<td>96.191</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>16546.245</td>
<td>284</td>
<td>58.261</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>38963.121</td>
<td>288</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Predictors: (Constant), EDUCA,
2 Predictors: (Constant), EDUCA, PLACCAST
3 Predictors: (Constant), EDUCA, PLACCAST, POSTCOMP
4 Predictors: (Constant), EDUCA, PLACCAST, POSTCOMP, BEHVCOMP
5 Predictors: (Constant), EDUCA, PLACCAST, POSTCOMP, BEHVCOMP, POPSEG
Dependent Variable: Recidivism Rate

The results of the F test are presented in Table 13 and indicate that there is a statistically significant difference between Models 2 and 3.
Table 13
Significance Test Model Comparison

<table>
<thead>
<tr>
<th>Model</th>
<th>N</th>
<th>R^1</th>
<th>K</th>
<th>F Value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>329</td>
<td>0.290</td>
<td>1</td>
<td>26.65</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>2</td>
<td>329</td>
<td>0.786</td>
<td>9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Intra-group Comparisons and Analysis of Variance

The first four sections of this chapter have focused upon the relationship between education and outcome for all studies analyzed as a whole. The unit of analysis has been the individual study and the outcome viewed in terms of the gain, or loss, during the test period, as measured by recidivism rates. For this portion of the analysis, the data collected are grouped into categories: types of institutions, types of individuals, types of programs, and variations in methodology. The gain or loss scores are compared by the differences between scores of groups within these classifications.

The primary concern when one must generalize from a sample to the general population is always the issue of representativeness. In order to determine the true representativeness of this study, the mean scores of subgroups are compared with the mean scores for the total population and the mean scores of other groups within the same group classification.

145

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
The analysis of variance ANOVA is a commonly used statistical method by which estimates of a number of variances are made and by which the significance of the differences between group estimates is determined. From a statistical viewpoint, it is ideal to have equal cell frequencies in each subclass of the analytical design. However, in some kinds of empirical research, particularly educational, disproportionate subclass frequencies are not unusual. Such is the case in this research study.

For the remainder of this analysis section, a least-squares analysis of variance will be used on selected independent variables as a measure of their potential relatedness to the primary calculated dependent variable (Effect Size). The independent group variables discussed below have been selected to offer a means of assessing educational effectiveness at reducing recidivism for different institutions, groups of individuals, and types of programs. Finally, variations in study methodology will be compared to understand their contribution, or detraction, to overall effect size.

To review slightly, effect size for this study is the difference of mean recidivism rates between a treatment group, one attending correctional education programs, and a control group. The mean effect size for the 124 studies
analyzed in this meta-analysis is .5978 with a standard deviation of .2652.

Effect size is a theoretical Z score with a range from -3.00 to +3.00. A study with no difference between the treatment group (education program participation) and the control group (no education program participation) would have an effect of 0. Any effect size greater than .50 is considered a major difference, and an effect size from .25 to .50 is considered a significant contribution (Hedges & Olkin, 1982).

Institutional Variations

This section will review variances in effect size based on institutional differences. The first variable to be considered is institution type. For this study institutions were divided into five types: Maximum Security, Medium Security, Minimum Security, Prerelease, and community. Table 14 presents the means and standard deviations of effect sizes for each group.

As can be seen from the data presented in Table 14, there is variation among the different types of institutions and the overall effect of education on recidivism. Table 15 presents the ANOVA results to test the statistical significance of these relationships.
Table 14
Institution Type Mean Variations

<table>
<thead>
<tr>
<th>Variable Grouping</th>
<th>Mean</th>
<th>Sd.</th>
<th>Grouped Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Security</td>
<td>.635238</td>
<td>.549015</td>
<td>.476867</td>
</tr>
<tr>
<td>Medium Security</td>
<td>.480355</td>
<td>.367048</td>
<td>.421100</td>
</tr>
<tr>
<td>Minimum Security</td>
<td>.760558</td>
<td>.437304</td>
<td>.724700</td>
</tr>
<tr>
<td>Prerelease</td>
<td>.362300</td>
<td>.000000</td>
<td>.000000</td>
</tr>
<tr>
<td>Community</td>
<td>.589286</td>
<td>.416172</td>
<td>.445000</td>
</tr>
</tbody>
</table>

Table 15: ANOVA
Institutional Type Variations

<table>
<thead>
<tr>
<th>Effect Size</th>
<th>Sum of Sq</th>
<th>df</th>
<th>Mean Sqr</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institution Residual</td>
<td>62.967</td>
<td>268</td>
<td>.235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>64.868</td>
<td>272</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Even though there appears to be a difference between the different types of institutions, the analysis of variance indicates that this difference is not statistically significant. A post hoc test was run to see if the prerelease data were causing the lack of significance. The results only improved the significance slightly; .084 from .092.

The next grouping variable to consider is population type. For this study populations were grouped into four
different categories: Adult Male, Adult Female, Mixed Populations, and Juvenile populations. Juvenile populations were included, but only for inmates age 17 and above. In most cases the range was from age 17 to 21.

The relationship between population types and effect size is presented in Tables 16 and 17. From the data presented in Table 16, and using adult male institutions as the central measuring point, there appears to be a major difference in mean effect size when compared to adult female institutions and juvenile institutions.

The mean effect size of adult male populations is .555782, which is considered quite strong; however, the mean effects of education on recidivism for adult females and juveniles are much greater with mean effects of .792203 and .880848 respectively. The age and gender relationships will be explored in further detail later in this analysis.

<table>
<thead>
<tr>
<th>Variable Grouping</th>
<th>Mean</th>
<th>SD</th>
<th>Grouped Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Male</td>
<td>.555782</td>
<td>.432267</td>
<td>.445950</td>
</tr>
<tr>
<td>Adult Female</td>
<td>.792203</td>
<td>.556147</td>
<td>.705933</td>
</tr>
<tr>
<td>Mixed Population</td>
<td>.418142</td>
<td>.520135</td>
<td>.266033</td>
</tr>
<tr>
<td>Juvenile</td>
<td>.880848</td>
<td>.673078</td>
<td>.622500</td>
</tr>
</tbody>
</table>

Table 16
Population Type Mean Variations
Table 17 presents the ANOVA results to test the statistical significance of the mean difference relationships in population types.

Table 17: ANOVA Population Type Variations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Sqs</th>
<th>df</th>
<th>Mean Sqr</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>4.521</td>
<td>3</td>
<td>1.507</td>
<td>6.422</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>62.883</td>
<td>268</td>
<td>.221</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>67.404</td>
<td>271</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Table 17 the analysis of variance indicates that the difference between population types is statistically significant.

The last grouping variable to be considered under institutional variations is location of the institution. For this study the United States was broken down into six regions: North East, South East, North Central, South Central, North West, and South West. Two additional categories were included, one for national level studies and one for studies conducted in Canada. Appendix A of this dissertation includes a regional map along with state assignments for each region.

The analysis of this variable rendered very little variation in mean effects between regions. Table 18 indicates that what small variation is present is not statistically significant.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Sqs</th>
<th>df</th>
<th>Mean Sqr</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>1.799</td>
<td>7</td>
<td>.257</td>
<td>1.062</td>
<td>.388</td>
</tr>
<tr>
<td>Location</td>
<td>66.312</td>
<td>274</td>
<td>.242</td>
<td></td>
<td></td>
</tr>
<tr>
<td>of Study</td>
<td>68.111</td>
<td>281</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Individual Variations**

The next set of ANOVAs to be considered are grouping variables related to individual characteristics such as race, gender, and age. Are there statistically significant differences in the mean effect of education on recidivism between these groups of inmates?

The first variable reviewed is race. For this study race was divided into four categories: White, Black, Other, and mixed. Even though the variable is considered an individual characterization, it was also used as a characterization for special groups of education programs. To test the relationship between effect size and race, the other category was included with the Black category and the mixed category was excluded from the analysis.

Table 19 indicates that there is a rather large difference between the mean effect of education for Whites and the mean effect of education for Blacks found in this meta-analysis.
### Table 19
**Race Mean Variations**

<table>
<thead>
<tr>
<th>Variable Grouping</th>
<th>Mean</th>
<th>Sd.</th>
<th>Grouped Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>0.586047</td>
<td>0.490826</td>
<td>0.470167</td>
</tr>
<tr>
<td>Black</td>
<td>0.863138</td>
<td>0.474561</td>
<td>0.776000</td>
</tr>
</tbody>
</table>

Table 20 test the relationship for statistical significance. From the information revealed in Table 20, it can be seen that the relationship identified in Table 19 is statistically significant beyond the $p < .05$ level. The theoretical implications for this finding are discussed in greater detail in the next chapter. However, since most of the education programs are at the lower education levels, literacy, ABE, and GED, this finding supports the human capital theory and other theories of economic development: individuals at the lower strata of socioeconomic status benefit most from development programs.

### Table 20: ANOVA
**Race Variations**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squared</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>1.158</td>
<td>1</td>
<td>1.158</td>
<td>4.824</td>
<td>.029</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>66.497</td>
<td>277</td>
<td>.240</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>67.655</td>
<td>278</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

152
The next variable in this section to consider is gender. For this study gender was dichotomized: Male, Female (0,1). When the population type of the institution was considered, adult female institutions outperformed male institutions with regards to a reduction in recidivism proportional to education. Table 21 indicates that this relationship holds true when gender alone is taken into account regardless of the institution type.

Table 21
Gender Mean Variations

<table>
<thead>
<tr>
<th>Variable Grouping</th>
<th>Mean</th>
<th>Sd.</th>
<th>Grouped Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>.596532</td>
<td>.484405</td>
<td>.452750</td>
</tr>
<tr>
<td>Female</td>
<td>.777382</td>
<td>.517350</td>
<td>.707150</td>
</tr>
</tbody>
</table>

The analysis of variance contained in Table 22 reveals that the relationship between male and female inmates depicted in Table 21 is statistically significant beyond the p < .05 level.

Table 22: ANOVA
Gender Variations

<table>
<thead>
<tr>
<th>Effect Size</th>
<th>Sum of Sq</th>
<th>df</th>
<th>Mean Sqr</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>.961</td>
<td>1</td>
<td>.961</td>
<td>4.022</td>
<td>.046</td>
</tr>
<tr>
<td>Residual</td>
<td>59.516</td>
<td>249</td>
<td>.239</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>60.478</td>
<td>250</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
When comparing the difference between male/female institutions and male/females as individuals, we see a difference between the mean scores of females in female institutions and females in male institutions or education programs conducted in male institutions. The data indicate that education has a greater impact for females than males; however, the impact is reduced somewhat when the education is received by females in male institutions. This phenomena will be discussed in more extensive detail in the next chapter of this dissertation.

The last variable under the section of individual variations to consider is age. Age has been considered an important variable in criminology and the study of deviance. Under normal conditions, as age goes up crime and deviance decrease. Because of this relationship, under normal conditions, as age increases recidivism decreases. What then is the relationship of education and recidivism when controlling for age? Is there a difference in mean effect sizes between age groups? For this study age was a continuous variable and the range ran from a low of 17 to a high of 40. For the current analysis age was compressed into four sub-groupings: 17-21, 22-25, 26-35, and 36 and above.

Table 23 discloses a rather interesting phenomena; education has a greater impact on recidivism for the lower
age groups than on upper age groups. It also appears that this relationship is linear. This supports results found in the correlation section.

Table 23
Age Mean Variations

<table>
<thead>
<tr>
<th>Variable Grouping</th>
<th>Mean</th>
<th>Sd.</th>
<th>Grouped Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE GROUPING:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-21</td>
<td>.737687</td>
<td>.586712</td>
<td>.551300</td>
</tr>
<tr>
<td>22-25</td>
<td>.638782</td>
<td>.494004</td>
<td>.630075</td>
</tr>
<tr>
<td>26-35</td>
<td>.522010</td>
<td>.450272</td>
<td>.397600</td>
</tr>
<tr>
<td>36+</td>
<td>.200900</td>
<td>.000000a</td>
<td>.000000a</td>
</tr>
</tbody>
</table>

a. Grouping (N too small)

To further test this inverse relationship, 95% confidence intervals were estimated and plotted for each of the four age groupings. Figure 2 illustrates this relationship and the associated confidence intervals for each. Figure 2 indicates that not only are the effect means inversely proportional to age but also are the grouping variances. An ANOVA was utilized to further test this relationship as well as the statistical significance.
From Table 24 we see that the relationship between program effect size and age of the population is statistically significant beyond the standard $p < .05$. 

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
Program Variations

The next category of grouping variables to be analyzed are variables related to the education program itself. Variables included in this grouping are: type of program, program funding, program segregation, population segregation, course completion, and behavior component.

The first variable in this grouping to be reviewed is course completion. Again this is a dichotomized variable: no, yes (0,1). With the aid of this variable all individuals were placed into three categories: course completers, non-completers, and controls. Up to this point the analysis conducted has eyed the relationship between individuals who have completed education courses and control subjects. It has been shown that there is a positive reduction in recidivism rates based on education.

To further add strength to this relationship, this section will compare course completers to course non-completers. If the control group mean recidivism rate is considered zero, one can then also relate variations of all three groups to each other.

Table 25 indicates a major difference between the mean effect of course completers when compared to course non-completers. The mean of all course completers is .767424, and the mean of course non-completers is .424471. However, if a mean effect of .3000 is considered a large
positive impact on recidivism, then even the non-completers had lower recidivism rates than the control groups and is statistically significantly.

Table 25
Course Completion Mean Variations

<table>
<thead>
<tr>
<th>Variable Grouping</th>
<th>Mean</th>
<th>Sd.</th>
<th>Grouped Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE COMPLETION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>.424471</td>
<td>.319669</td>
<td>.378800</td>
</tr>
<tr>
<td>No</td>
<td>.767424</td>
<td>.428418</td>
<td>.694500</td>
</tr>
</tbody>
</table>

To test the statistical significance of this relationship, an ANOVA was utilized for this grouping of data. Table 26 indicates that the relationship is strong and statistically significant at the p < .0001 level.

Table 26 ANOVA
Course Completion Variations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Sq</th>
<th>df</th>
<th>Mean Sqr</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Regression</td>
<td>2.047</td>
<td>1</td>
<td>2.047</td>
<td>13.377</td>
<td>.000</td>
</tr>
<tr>
<td>Course</td>
<td>11.018</td>
<td>92</td>
<td>.153</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completion</td>
<td>13.066</td>
<td>93</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The strength of the relationship between completers and non-completers has been established, and it has been shown that the relationship is strong with regards to effect size. However, is there variation between
non-completers? Is there variation in the recidivism rates of individuals who fail to complete courses but in different percentages? To answer these questions, the continuous variable percent completion was compressed into four categories: (1) < 25% completion, (2) 26% to 40% completion, (3) 41% to 75% completion, and (4) 76% to 100% completion. Not all studies in this analysis provided data on completion percentages; however, sixty effects were generated from twenty-three different studies, a more than adequate sample size to run analysis of variance on these four sub-groupings.

Table 27 presents the results of the data analysis for these four subgroups.

<table>
<thead>
<tr>
<th>Variable Grouping</th>
<th>Course Completion</th>
<th>Mean</th>
<th>Sd.</th>
<th>Grouped Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE COMPLETION</td>
<td>&lt; 25%</td>
<td>.329840</td>
<td>.118660</td>
<td>.360033</td>
</tr>
<tr>
<td></td>
<td>26% - 40%</td>
<td>.505050</td>
<td>.227353</td>
<td>.496000</td>
</tr>
<tr>
<td></td>
<td>41% - 75%</td>
<td>.639755</td>
<td>.399505</td>
<td>.605650</td>
</tr>
<tr>
<td></td>
<td>76% - 100%</td>
<td>.847682</td>
<td>.446728</td>
<td>.755733</td>
</tr>
</tbody>
</table>

It becomes obvious from the data in Table 27 that as the amount of course completion increases, the impact of education on recidivism also increases. Individuals who complete less than 25% of a course recidivate at rates closer to the control group than individuals who complete...
100% of the course. It appears that this relationship is strong and linear.

Table 28 is the ANOVA for this four set grouping of non-completers and reveals that the relationship is statistically significant beyond the p < .05 level.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sig.</th>
<th>Sum of Sqs</th>
<th>df</th>
<th>Mean Sqr</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Regression</td>
<td></td>
<td>1.603</td>
<td>3</td>
<td>.534</td>
<td>3.364</td>
</tr>
<tr>
<td>Course Residual</td>
<td></td>
<td>9.018</td>
<td>57</td>
<td>.159</td>
<td></td>
</tr>
<tr>
<td>Completion %</td>
<td>Total</td>
<td>10.066</td>
<td>60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 28 verifies that not only is completing a correctional education course significant in reducing recidivism, but also the degree of completion is significant in the transition from a criminal career. Figure 3 is a box plot showing the relationship between course completion percentage and effect size.

Figure 3 reveals an almost perfect linear relationship between course completion percentage and effect size. This figure also indicates that as the percent of course completion increases, so does the variance of effect within a given category; this is expected and supports the other analysis performed in this chapter.
The next variable to be reviewed under the program variations section is program type. For this study programs were divided into seven categories: Literacy, ABE, GED, Vocational, Higher Education, Life Skills, and multiple. A multiple category is defined as an education program that contains at least one academic component in addition to a vocational component.

Table 29 shows the relationship between Effect Size and the various types of programs. As can be seen from the data in this table it appears that the type of program does not affect the recidivism rate significantly. There appears to be a slight difference in effect size as the degree of education increases, but not statistically significant.
Table 29
Program Type Mean Variations

<table>
<thead>
<tr>
<th>Variable Grouping</th>
<th>Mean</th>
<th>Std.</th>
<th>Grouped Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROGRAM TYPE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literacy</td>
<td>.577000</td>
<td>.313823</td>
<td>.550467</td>
</tr>
<tr>
<td>ABE</td>
<td>.430682</td>
<td>.245540</td>
<td>.401533</td>
</tr>
<tr>
<td>GED</td>
<td>.624058</td>
<td>.529760</td>
<td>.522700</td>
</tr>
<tr>
<td>Vocational</td>
<td>.619500</td>
<td>.389562</td>
<td>.489050</td>
</tr>
<tr>
<td>Higher Education</td>
<td>.653897</td>
<td>.580381</td>
<td>.471400</td>
</tr>
<tr>
<td>Life Skills</td>
<td>.366957</td>
<td>.262075</td>
<td>.375100</td>
</tr>
<tr>
<td>Multiple</td>
<td>.626919</td>
<td>.572551</td>
<td>.453400</td>
</tr>
</tbody>
</table>

Table 29 is the ANOVA for program types and effect size. Here it can be seen that the relationship is not significant at the p < .05 level. From the analysis presented in Table 29 and Table 30, it appears that the type of program has very little impact on the overall reduction in recidivism. However, the next question to consider is: Does the relationship between program type and effect size vary with race or gender?

Table 30 ANOVA
Program Type Variations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Squ</th>
<th>df</th>
<th>Mean Sqr</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Regression</td>
<td>1.667</td>
<td>6</td>
<td>.278</td>
<td>1.150</td>
<td>.334</td>
</tr>
<tr>
<td>Program Type</td>
<td>66.444</td>
<td>275</td>
<td>.242</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>68.111</td>
<td>281</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 31 indicates that when gender is controlled for program, type becomes meaningful. Here it is shown that for
literacy and ABE programs, males and females are affected almost equally. However, the effect for females from GED programs and vocational programs is almost twice as strong as males.

For this study no data was available on higher education programs for incarcerated females, therefore, a comparison between males and females was not possible. In life skills programs females again faired much better than their male counterparts.

When multiple programs, programs which mixed academic programs with vocational programs, females still performed better than males; but the difference is not statistically significant.

Overall there is a statistically different effect of education for females than males, and this is further verified by the results from the ANOVA presented in Table 32.

In this table the total accumulated effect difference of education between males and females is statistically significant at beyond the p < .01 level.

If there is a statistically significant difference between program types and gender, is there a difference between program types and race? The answer to this question and others can be found in the results presented in Table 33 below.
### Table 31
Program Type by Gender Mean Variations

<table>
<thead>
<tr>
<th>Variable Grouping</th>
<th>Mean</th>
<th>Sd.</th>
<th>Grouped Median</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROGRAM TYPE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Literacy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.693236</td>
<td>.283860</td>
<td>.571325</td>
</tr>
<tr>
<td>Female</td>
<td>.630682</td>
<td>.245540</td>
<td>.601533</td>
</tr>
<tr>
<td><strong>ABE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.435588</td>
<td>.289950</td>
<td>.395300</td>
</tr>
<tr>
<td>Female</td>
<td>.417600</td>
<td>.275836</td>
<td>.460700</td>
</tr>
<tr>
<td><strong>GED</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.635859</td>
<td>.423045</td>
<td>.494200</td>
</tr>
<tr>
<td>Female</td>
<td>.900714**</td>
<td>.362601</td>
<td>.875900**</td>
</tr>
<tr>
<td><strong>Vocational</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.548359</td>
<td>.371058</td>
<td>.426880</td>
</tr>
<tr>
<td>Female</td>
<td>.923621**</td>
<td>.363420</td>
<td>.776000**</td>
</tr>
<tr>
<td><strong>Higher Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.653897</td>
<td>.580381</td>
<td>.471400</td>
</tr>
<tr>
<td>Female</td>
<td>-a-</td>
<td>-a-</td>
<td>-a-</td>
</tr>
<tr>
<td><strong>Life Skills</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.350447</td>
<td>.257039</td>
<td>.375100</td>
</tr>
<tr>
<td>Female</td>
<td>.615436*</td>
<td>.387409</td>
<td>.597852*</td>
</tr>
<tr>
<td><strong>Multiple</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.594250</td>
<td>.214124</td>
<td>.620250</td>
</tr>
<tr>
<td>Female</td>
<td>.688418</td>
<td>.494085</td>
<td>.644700</td>
</tr>
</tbody>
</table>

**Notes:**
- a- no data for comparison
- * significant @ p < .05
- ** significant @ p < .000

### Table 32 ANOVA
Program Type Gender Variations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Sq</th>
<th>df</th>
<th>Mean Sqr</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effect Size</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Program</td>
<td>Regression</td>
<td>3.485</td>
<td>6</td>
<td>1.162</td>
<td>4.926</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>26.414</td>
<td>244</td>
<td>.236</td>
<td></td>
</tr>
<tr>
<td>Type by Gender</td>
<td>Total</td>
<td>29.899</td>
<td>250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
From the data presented, it can be seen that race, like gender, is effected by program type. The first program type that becomes significant for race is literacy. Here it is revealed that the difference of means between whites and blacks is significant at the p < .05 level. However, this relationship does not hold true when ABE programs are considered.

When the next level of education, GED, is considered, the relationship continues again and is even stronger. As the data reveals in Table 33 this relationship is significant at the P < .0001 level. Again a significant increase is revealed, the total effect size almost doubles for black inmates when compared to white inmates.

The relationship continues to hold in vocational programs, but weakens and is only statistically significant at the p < .05 level.

For this study higher education data obtained from the study collection were not broken down by race, therefore these comparisons could not be calculated.

When life skills programs and mixed or multiple programs are considered, the relationship between race and program type continues as well as the significance level.

Out of seven program types, five were statistically in favor of minorities; data was not available on one type.
Therefore, these results indicate that minorities benefit more from inclusion in correctional education programs than do Whites. This will be discussed in more detail in the next chapter. Below Table 34 presents the results of the ANOVA for race and program type.
Table 34 ANOVA
Program Type Race Variations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Sqs</th>
<th>df</th>
<th>Mean Sqr</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Type by</td>
<td>Regression</td>
<td>18.275</td>
<td>6</td>
<td>3.045</td>
<td>12.582</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>65.920</td>
<td>272</td>
<td>.242</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>67.655</td>
<td>278</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The next set of program variation variables to be reviewed is discussed as a group and includes the variables: placement assistance, program segregation, population segregation, program funding agency, and behavior component. A review of each variable is in order before analyzing the data results.

Placement Assistance: For this study, placement assistance is a dichotomous variable (0,1). It addresses the question: Was there a job placement component part of the education program?

Program Segregation: For this study, program segregation is a dichotomous variable (0,1). It addresses the question: Was the education program segregated from the general prison population during operation? It could be on the same compound or grounds and still be segregated.

Population Segregation: For this study, population segregation is a dichotomous variable (0,1). It addresses the question: Were the students enrolled in education programs segregated from the general population? This
variable addressed the inmates' after program hours lifestyle; is there a community effect for the program?

Program Funding: For this study, program funding was a non-orderable discrete variable with five categories: State DOC, State DOE, Federal Grant, Local Government, Private. It addresses the question: Who funded the education program?

Behavior Component: For this study, behavior component was a dichotomous variable (0,1). It addresses the question: Was there a component of the education program that addressed behavior, anger management, and social responsibility, separately?

From the analysis of these variables program funding did not significantly affect post-release outcome. However, the remaining variables had a statistically significant positive impact on effect size and are discussed in conjunction with Table 35 and Table 36.

The data conveyed in Table 35 indicates that correctional education programs which included a job placement component significantly outperformed those which did not in reducing recidivism. Post release income was a major consideration in the theoretical approach of this dissertation; however, income levels were available in only two studies, and the data were not complete enough to include in this meta-analysis.

168
Table 35
Program Variable Mean Variations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Sd.</th>
<th>Grouped Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placement Assistance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>.931237**</td>
<td>.581366</td>
<td>.774533**</td>
</tr>
<tr>
<td>No</td>
<td>.391483</td>
<td>.263374</td>
<td>.373133</td>
</tr>
<tr>
<td>Program Segregation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>.721745**</td>
<td>.516021</td>
<td>.634860**</td>
</tr>
<tr>
<td>No</td>
<td>.547038</td>
<td>.503238</td>
<td>.428625</td>
</tr>
<tr>
<td>Population Segregation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>.840437**</td>
<td>.585435</td>
<td>.708850**</td>
</tr>
<tr>
<td>No</td>
<td>.523500</td>
<td>.448156</td>
<td>.428700</td>
</tr>
<tr>
<td>Behavior Component</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>.698889*</td>
<td>.523073</td>
<td>.646500*</td>
</tr>
<tr>
<td>No</td>
<td>.559490</td>
<td>.485779</td>
<td>.428025</td>
</tr>
</tbody>
</table>

Notes:
* significant @ p < .05  
** significant @ p < .000

It appears that job placement is a suitable proxy for post-release income even though it is not a continuous variable and cannot be utilized directly in a linear equation with education. The details and ramifications of this finding will be discussed in considerable detail in the next chapter.

Two additional program components which are also statistically significant at reducing recidivism are program segregation and population segregation. These have major connections to the theoretical relationships established in this dissertation in chapter II. From the data in Table 35, it can be seen that programs which were segregated from the general prison population outperformed...
those which did not. However, those programs that segregated the education program population from the general population had the greatest impact on reducing recidivism.

The last variable to be considered in this section is behavior component. Again, from the data presented in Table 35, it can be seen that the mean difference between programs with a behavior component and those without is statistically significant. The relationship is strong, but the overall impact is not as great as population segregation or program segregation. Nonetheless, it is strong and statistically significant.

To test the statistical significance of these four variables and their associated sub-groupings, ANOVA's were generated on each variable along with effect size. Table 36 below contains the results of this analysis.

This table indicates the results of three groupings are significant beyond the p < .001 level and one is beyond the p < .05 level. As mentioned previously individual findings in this analysis section will be discussed in more extensive detail in the next chapter.

Methodology variations

The last group of variables to be analyzed and discussed in this chapter are variables related to the methodology of the studies included in the meta analysis.
### Table 36 ANOVA
Program Variable Variations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Sq</th>
<th>df</th>
<th>Mean Squ</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effect Size</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Regression</td>
<td>19.349</td>
<td>1</td>
<td>19.349</td>
<td>111.139</td>
<td>.000</td>
</tr>
<tr>
<td>Placement Residual</td>
<td>48.277</td>
<td>277</td>
<td>.174</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistance Total</td>
<td>67.575</td>
<td>278</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program Regression 1.843</td>
<td>1</td>
<td>1.843</td>
<td>7.125</td>
<td>.008</td>
<td></td>
</tr>
<tr>
<td>Segregation Residual 63.641</td>
<td>246</td>
<td>.259</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total 65.484</td>
<td>247</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Segregation</td>
<td>4.775</td>
<td>1</td>
<td>4.775</td>
<td>20.008</td>
<td>.000</td>
</tr>
<tr>
<td>Residual 57.283</td>
<td>240</td>
<td>.239</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total 62.059</td>
<td>241</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior Component Regression 1.025</td>
<td>1</td>
<td>1.025</td>
<td>4.160</td>
<td>.042</td>
<td></td>
</tr>
<tr>
<td>Residual 64.300</td>
<td>261</td>
<td>.246</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total 65.325</td>
<td>262</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Information obtained from any research project is important regardless of the significance of the outcome. However, it is of paramount interest to any researcher to consider potential bias that may have been introduced into the study or the data, therefore altering or affecting the final outcome.

This section will attempt to compare a number of variables against effect size, the primary dependent variable, to identify any selection bias introduced by design methodology in the various studies contained in the meta-analysis of this dissertation.
Eight variables have been identified for this section and are broken down into three groupings. The first grouping includes the following variables: Discipline of primary investigator, type of agency the investigator was employed by, and the type of document the report was as published in.

The second grouping contains variables which pertain to research design and consist of the following variables:

**Evaluation** - Was the study part of a larger program evaluation?

**Recidivism Period** - What was the time span of the study?

**Method Strength** - How strong was the study methodologically?

The last grouping determines if the year the study was conducted in or the agency funding the study, impacted the results.

Using Pearson correlations and ANOVA's for significance testing only one of the above listed variables indicated a statistically significant relationship with effect size: Method strength.

Table 37 below reveals the relative relationships between the different levels of this veritable and effect size.
Table 37
Method Strength Mean Variations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Sd.</th>
<th>Grouped Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method Strength</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong</td>
<td>.916566</td>
<td>.609352</td>
<td>.792700</td>
</tr>
<tr>
<td>Moderate</td>
<td>.622654</td>
<td>.389140</td>
<td>.543900</td>
</tr>
<tr>
<td>Weak</td>
<td>.339667</td>
<td>.259910</td>
<td>.273567</td>
</tr>
<tr>
<td>No Scientific Value</td>
<td>.004870</td>
<td>.009700</td>
<td>.006650</td>
</tr>
</tbody>
</table>

The data presented in this table is not surprising; strong methods should produce studies that capture a larger degree of variance within the true population; therefore, capturing the true relationship between the two variables. Figure 4 is a box plot of the relationship between method strength and effect size. This figure indicates that as the strength of the design increased, so did the variance of the data. As mentioned previously, as the variance of the data increases, so does the probability of capturing the true population mean.

Table 38 ANOVA
Method Strength Variations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Sq</th>
<th>df</th>
<th>Mean Sq</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Regression</td>
<td>17.693</td>
<td>3</td>
<td>5.898</td>
<td>32.520</td>
<td>.000</td>
</tr>
<tr>
<td>Method Residual</td>
<td>50.418</td>
<td>278</td>
<td>.181</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strength Total</td>
<td>68.111</td>
<td>281</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As a final test of significance, an analysis of variance was conducted using effect size as the dependent variable and method strength as the independent variable. Table 38 below, indicates this relationship is strong and statistically significant at the p < .0001 level.

The next and final section in this chapter is a summary of the analysis presented thus far along with verification of hypothesis testing and final conclusions.

**Summary**

In each model presented in this chapter the expected effect was achieved. The research presented and tested in this chapter confirmed the research hypotheses presented in
chapter IV. Each hypothesis presented in chapter IV will be reviewed below along with the results of the testing presented in this chapter.

However, the overall results of this study indicate that a strong relationship does exist between the variables being considered; education does have a positive impact on reducing recidivism.

It has been empirically validated that the variables selected in this investigation are among the most relevant factors operating in the corrections environment that would subsequently have a positive affect upon an inmate's ability to achieve a crime-free life. Secondly, it has been verified through this research that an inmate's exposure to education, while incarcerated, operates more independently on post-release outcome than is often assumed. Thirdly, a significant relationship exist between program variables and the inmate's recidivism rate.

Finally, it is important to realize that from the size of the sample in this study (93,981), the number of studies evaluated in the meta-analysis (124), the range of age in the study population (17-40), and the size of the Fail-safe N (916) it is improbable that a statistically significant positive relationship does not exist between correctional education and recidivism.
Hypothesis Review and Testing

Based on the propositions presented in Chapter I, the expected relationships discussed in the theoretical section of Chapter II, and the reasoning and rationale presented in Chapter IV, six hypotheses were presented in chapter IV for empirical validation. Because of the nature of a meta-analysis, all hypotheses presented were broad regarding education and recidivism. Each hypothesis is presented along with the statistical findings, results, and comments on either rejection of the hypothesis or failure to reject the hypothesis.

Hypothesis 1 - A more intense engagement with an academic program will result in a greater degree of impact and lead to changes or processes of individual/social development that will inhibit a return to criminal activity.

Findings: The first testing of this hypothesis is conducted using Pearson Correlation Coefficients and the variables: Effect size, course completion percentage, education level, and population segregation. All three variables are positively correlated with effect size at a significance level beyond p < .0001.

Second, the logistic regression models presented in this dissertation utilized all three variables with positive results. The final Logistic regression Model produced an $R^2$ of .729, significant at the .0001 level.
Finally, ANOVA results presented in Table 27 produced a F statistic of 13.377 which is statistically significant at the .0001 level.

**Results:** There is a statistically significant difference in recidivism rates based on program engagement intensity. Therefore, Research hypothesis 1 is not rejected.

**Hypothesis 2** - Higher education programs will have a particularly powerful impact on inmates who are new to cognitive development or creative thinking or who for other reasons feel disengaged from the dominant culture.

**Findings:** ANOVA results presented in Table 30 produced a F statistic of 1.150 which is not statistically significant at the .05 level.

**Result:** It appears from the data presented that all education programs impact recidivism equally. However, minorities and women benefit more than white males. Regarding higher education programs, most of the studies included in this analysis which presented data on higher education programs did not break down the data or results by gender, race, or any variable that could be equated to this hypothesis. Therefore this hypothesis cannot be rejected nor can it be accepted based on this study.
Hypothesis 3 - For individuals with poor educational backgrounds and from families with little or no experience with higher education, even modest academic success within the prison education program will result in significant personal growth and improve chances of success after release.

Findings: ANOVA results presented in Table 20 produced an F statistic of 4.824, which is statistically significant beyond the .05 level of acceptance. In addition, grouped effect means for whites was less than the effect means of minorities and was statistically significantly at the .0001 level; .586047 v. .863138.

Results: There is a statistically significant difference in recidivism rates based on educational background. Individuals from families with little or no experience with education recidiviate at lower rates after receiving an education while incarcerated. Therefore, Research hypothesis 3 is not rejected.

Hypothesis 4 - The existence of a vibrant learning community as opposed to the mere offering of courses will significantly enhance the impact of the educational program.

Findings: The first testing of this hypothesis is conducted using Pearson Correlation Coefficients and the variables: Effect size, population segregation, and program segregation. Both variables are positively correlated with effect size at a significance level beyond the p < .0001 level.
Second, the logistic regression models presented in this study utilized both variables with positive results. The final Logistic regression Model produced an $R^2$ of .729, significant at the .0001 level.

Finally, ANOVA results presented in Table 36 produced a $F$ statistic of 20.008 which is statistically significant at the .0001 level for population segregation and a $F$ statistic of 7.125 and which is statistically significant at the .001 level.

**Results:** There is a statistically significant difference in recidivism rates based on program and population segregation and intensity. Therefore, Research hypothesis 4 is not rejected.

**Hypothesis 5** - Broad exposure to the liberal arts will better serve students in prison education than an early concentration in one discipline.

**Findings:** The first testing of this hypothesis is conducted using Pearson Correlation Coefficients and the variables: Effect size and program type. These two variables are not correlated at a significance level beyond the $p < .05$ level.

ANOVA results for the general population presented in Table 30 produced a $F$ statistic of 1.150 which is not statistically significant at the .05 level.

However, when controlling for race and gender, the results become positive and statistically significant.
ANOVA results, controlling for gender, presented in Table 32, produced an F statistic of 4.926 which is statistically significant at the .001 level.

Finally, ANOVA results, controlling for race, presented in Table 34 produced a F statistic of 12.582, which is statistically significant at the .0001 level.

Results: There is a statistically significant difference in recidivism rates based on program type and gender and program type and race, but not for the general prison population. Therefore, Research hypothesis 5 is not rejected with conditions.

Hypothesis 6 - An environment which encourages one to desire or need identification with a criminal subculture will be resistant to any changes in attitude or life plan.

Findings: The first testing of this hypothesis is conducted using Pearson Correlation Coefficients and the variables: Effect size, population segregation, program segregation, and post release component. All three variables are positively correlated with effect size at a significance level beyond the p < .0001 level.

Second, the logistic regression models presented in this chapter utilized all three variables with positive results. The final Logistic regression Model produced an $R^2$ of .729, significant at the .0001 level.

Finally, ANOVA results presented in Table 36 produced an F statistic of 20.008, which is statistically
significant at the .0001 level for population segregation, and an F statistic of 7.125, which is statistically significant at the .001 level.

Results: There is a statistically significant difference in recidivism rates based on an individual's environment. Therefore, Research hypothesis 6 is not rejected.

The next chapter contains a complete discussion on the connection between the theoretical points made in this dissertation and the results presented in this chapter. Additionally, the ramifications that these findings might have on future research and correctional policy are reviewed.
CHAPTER VI
DISCUSSION, CONCLUSIONS, AND SUMMARY

This chapter is composed of five major sections. Section one is an overview of the study. In the second section, the role of prediction in criminology is reviewed along with ethical considerations. In the third section, a connection is drawn between the statement of the problem, the theoretical solution suggested, and the results of the data analysis. Section four covers policy and social implications are discussed. Finally, the last section contains overall conclusions followed by a summary.

Overview of the Study

This dissertation has been a study of crime, education, and recidivism. However, more fundamentally, it has been a study of human behavior.

... human behavior does not exist in a vacuum, .... all behavior has some sort of social context. Theories could emphasize either the factors in the external environment which make the individual behave, or could emphasize the internal .... capacities which the individual must translate into the terms dictated by the environment. The relative strengths of the two forces will vary as the individual moves through time and space. (Hodgkinson, 1962: pp. 144-145).

One of the basic goals of any educational system is to facilitate a program of selecting and organizing learning experiences whereby each student will develop mentally, physically, socially, and psychologically to the maximum of
his/her potentials. Thus, in order to accomplish this, the instructional program must be directed toward affecting the educational experiences of those students in such ways that each will develop in terms of his/her individual aptitudes, abilities, and aspirations.

Corrections administrators have long recognized the possibility of education as a method of creating a favorable change in incarcerated individuals. Through education the individual would be encouraged in his/her attempts to succeed within society. However, this feeling has been more of an intuitive notion rather than empirically determined.

The goal of this dissertation has been the development of a model of recidivism prediction which could overcome the problems of subjectivity, inaccuracy, and invalidity found in many currently used methods of prediction. This investigation was designed to explore relationships between several educational variables and post-release behavior of criminal offenders. The results of this research support and confirm the propositions stated in Chapter I and test the hypothesis set forth in Chapter IV.

The elements of the social bond and differential association have proved in the past to be important predictors of future criminal activity. As indicators of recidivism, these two theoretical perspectives provide the
foundation for a new model in correction reform. At the beginning of this investigation it was anticipated that the addition of education, income, and a measurement of the social bond, grounded in criminological theory (elements of the social bond and differential association), would significantly add to the predictive ability of recidivism.

There has been a false perception among academicians that policy makers and practitioners largely ignore research findings (Petersilia, 1991). The assumption taken in this dissertation was that theoretical criminology and education may have more to offer policy makers than is typically recognized by either group. The correct path appears to be the one suggested by Quinney and Wildeman (1991) in which the recognition of concrete problems rather than the development of a single theoretical perspective is preferred.

The approach used in this dissertation has been to develop the problem and then to apply appropriate educational and criminological theories and perspectives to solve the problem. Using meta-analysis as a method of mining the knowledge produced by numerous studies in the area of corrections education, the goal has been to utilize the additive power of these studies and the various approaches to solve a critical social problem rather than to develop a new social theory.
The findings from this study suggest that criminologically grounded variables such as, education, income, and the social bond, previously applied to predict criminality can be successfully utilized to predict, and then ultimately prevent, continuation of an already existing criminal career. The end result can be applied to policy development that will aid in a reduction of prison populations.

**Recidivism Prediction**

Social scientists have a long history of interest in prediction of human behavior, presumably because the ability to accurately predict outcomes would be of immense practical social use. The administration of criminal justice and social control involves a large number of decisions, many of which might be improved if decision makers were better informed about what the future is likely to hold.

On a daily basis judges must decided whether or not to grant pre and post trial releases and what type of sentences to impose on convicted offenders. Correctional officials must decided on the security level and activities of their charges, and parole boards must decided whether to release an inmate before the expiration of his or her sentence.
Many of these administrators base their decisions, at least in part, on their prediction of the likely future actions of the individual whose fate they are considering. Most predictions are made informally, on the basis of experience or subjective judgment. Due to the inaccuracy of these judgment decisions, there has been increased interest in statistical or actuarial predictions. This is partly because statistical predictions may be justified on objective scientific grounds, and partly because of an accumulation of evidence that statistical predictions tend to be more accurate than clinical and other informal methods (Gottfredson & Gottfredson, 1986; Monahan, 1981).

The possibility of using formal methods of prediction in criminal justice decision-making raises the question of: When and in what ways it is ethical to do so? This question has been extensively discussed in the criminological literature (Blumstein, et al, 1986; Farrington, 1986; Morris & Miller, 1985; Tonry, 1986).

The most obvious set of ethical concerns has to do with the possible uses of prediction. For example, proponents of selective incapacitation, such as Greenfield (1987), clearly find it acceptable to treat certain individuals more harshly than they would otherwise be treated on the basis of a prediction of their likely future criminal behavior.
All scholars do not agree with Greenfield's position. Morris and Miller (1985) believe that an increase in penalties because of a prediction of likely future criminality is acceptable only if the punishment is not increased beyond that which would be justified as deserved under the law, independently of such a prediction. Others, such as Gottfredson and Gottfredson (1986), support the use of prediction to select individuals for less severe punishment, selective deinstitutionalization; but they would not support any use of prediction to select individuals for more severe punishment.

It is obvious that opinions differ on the extent to which it is ethically proper for predictive considerations to influence either the choice of sanctions or services or the continuation of those sanctions and services. The weight one considers acceptable for prediction-based classification rules should be dependent on the gravity of the harm one is trying to prevent, social or individual, through the use of a such a system.

Commonly invoked criteria for assessing whether a potential predictor is ethically acceptable include its relationship to the blame worthiness of the offender, and the empirical and logical relationship of the predictor to the behavior being predicted. The literature suggests that variables such as prior adult criminal history, behavior,
attitude, education, employment status, and family relations meet the criteria for inclusion in a predictive model. Characteristics such as race, ethnicity, gender, and religion are considered unacceptable predictors because they "...lack a relationship to blame worthiness, they have no logical relationship to offending patterns and their use affronts basic social values" (Blumstein, et al, 1986, p. 147).

One of the most significant of the predictor variables, education, has been the focus of numerous studies (Akers, 1984; Anderson, et al, 1991; Becker, 1964; Chandler, 1973; Lewis & Seaman, 1978) as well as this dissertation. This investigation has argued that prison education programs are representative of a larger number of socializing programs serving to increase prison safety and to decrease recidivism. Education achieves these goals by reducing prisonization and nurturing pro-social norms which support rule and law abiding behavior. Michael Foucault (1977) referred to the same process as "normalization". For Foucault, normalization in prison, meant operations striving to correct current behavior rather than strictly punishing past behavior. The normalizing techniques found in prisons, Foucault, argued, differ only in being more intense than those found in other social institutions such as school and the workplace.
As indicated, education programs are a critically important component in socialization, normalization, and, therefore, prison reform. Prison education program participation socializes by offering relief from the pains of imprisonment and by helping inmates to appreciate and adopt pro-social norms. Since as far back as the time of Aristotle, philosophers and scholars of education have argued that education creates the socially good (i.e., moral) person (Durkheim, 1911). Early scholars viewed the educated person as having both the knowledge and reasoning ability synonymous with the truly free and moral human being. Uneducated, un-socialized or contra-socialized persons, incapable of informed social reflection, are truly imprisoned.

Meta-Analytic Synopsis

Policy relevant conclusions emerge when meta-analytic techniques are used to achieve consensus out of the inconsistencies found in individual research studies (Andrews, et al, 1990; Glass, 1976, 1978; Hunter, et al, 1992)

This dissertation used meta-analytic techniques to determine what factors and variables associated with education best predict offender recidivism. One hundred and twenty-four studies were identified as suitable for inclusion in the meta-analysis. These collective studies
generated three hundred and twenty-nine effect sizes between correctional education and recidivism. The 329 study effect sizes were based on a total sample size of 93,981 offenders.

The generalizability of any meta-analysis is limited to the nature of the studies examined. Some studies reviewed for inclusion were eliminated because the statistics employed were reported in such a way that Pearson r's could not be calculated. In other studies, non-significant Pearson r's were not reported or specified only as "not significant". In those cases, the results of the unreported, non-significant, values were to be included a numerical value of zero was applied. Three percent (9) of the effect sizes used in this investigation fell into this category. Therefore, the mean effect values and Pearson r's, presented in the results, represent very slight underestimation's.

This meta-analysis did not attempt to retrieve unpublished studies that were not immediately available. A common assumption in meta-analysis is that unpublished studies produce lower effect sizes than those that are published (Lipsey & Wilson, 1993). Lipsey and Wilson found this to be true for psychological treatment studies; however, similar results have not been found in education or recidivism studies. This analysis included eighteen
unpublished studies and there was no statistically significant difference between the published and unpublished study mean effect sizes.

Considering the number of studies included in this investigation (124) and the large sample size (93,981), reasonable confidence can be placed in the results. Additional research, while always indispensable, is unlikely to change the direction or ordering of the results in any substantive way.

The remainder of the meta-analytic discussion addresses the issues and questions raised in the introduction chapter of this dissertation.

A) Does correctional education reduce recidivism?

This meta-analysis produced an overall effect size of .5407. Considering that any effect greater than .20 is significant and any effect greater than .30 is moderately strong (Hedges & Olkin, 1982), it appears that from the 124 studies analyzed education has proved to be a strong variable for reducing recidivism. In addition, the meta-analysis confirmed previous narrative reviews that addressed variables such as age, associations, gender, and social achievement.

B) This section will answer two questions. Are there program differences that either reduce recidivism or
increase recidivism? Are all individuals effected equally with education?

All tests for homogeneity within sub-categories were significant at the p < .05 two-tailed significance level. There was a significant difference between the eight primary predictor categories (F=10.84, p < .01). The multiple comparison test of the mean r values revealed that the predictor categories of education and criminal association factors were significantly better predictors of recidivism than individual factors such as race, age, or gender. However there were significant differences between these groupings when intra-grouping analysis of variance were conducted.

A final methodological point concerns one of the goals of meta-analysis. Hunter and Schmidt (1990) are interested in determining the maximum value that can be obtained in prediction if all variables were perfectly measured. Others insist that the goal of meta-analysis is to "teach us better what is, not what some day might be ........." (Rosenthal, 1991, p.25). This meta-analysis attempted to address some of the here and now concerns of corrections officials; therefore, Rosenthal's guidelines were followed. This meta-analysis did not attempt to statistically adjust for methodological artifacts which may or may not have had an impact on the magnitude of the effect sizes obtained.
Few prediction studies contain enough information to statistically correct for all but a very few problems in measurement.

To this end, the modest contribution from this meta-analysis has been to clarify which education and education program variables and measures will assist practitioners and policy makers in their goals of reducing prison overcrowding, reducing crime in society, and designing better rehabilitation programs.

Theoretical Connection

The review of the literature indicates several problems with the current criteria used to assist in post-release outcome prediction. As discussed in Chapter I of this dissertation, the problems with the current models used for prediction outcome are:

1) They are inaccurate in their predictive ability.

2) They explain very little of the variance in post-release outcome.

3) They make use of subjective information that could be objectively quantified.

4) They fail in their mission to protect the public while at the same time do little to provide equality to offenders.

The primary question asked in this dissertation is: To what degree does the inclusion of education, education program factors, psychometric properties, and income,
significantly increase the predictive power in a model of post-release outcome (recidivism)? Does education work in reducing recidivism?

This dissertation proposed that elements of the social bond, measures of differential association along with information concerning important points in the offenders life cycle, can objectively provide information which is currently used subjectively. The primary question was answered, by the logistic regression models of this dissertation. The amount of improvement in post-release prediction which can be expected from the addition of the variables proposed increased from an \( R^2 \) of .22 to an \( R^2 \) of .794.

**Comparison of Current Models**

The first problem found in current models is their inability to accurately predict post-release outcome. The review of the literature suggested that the accuracy rate in predicting outcome may be as low as 20 percent (Champion, 1990; Bureau of Justice Statistics, 1997; Gottfredson & Wilkens, 1978). The range of accuracy is between twenty to sixty percent and is rather inconsistent throughout the literature (Champion, 1990; Gottfredson, 1979).

The accuracy of the models presented in this dissertation predict post-release outcome is over 86% (see
This increase is not only statistically significant, it has substantive value in addressing the issues of public safety, offender rights, and rehabilitation.

The second problem of current models involves the effectiveness of Salient Factor Scores (SFS) as a lone predictive tool. The amount of variance explained in post-release outcome by SFS, while significant at the .05 level, generally has low explanatory power ($R^2 = .22$) (Champion, 1990; Carter, Glaser, & Wilkins, 1984; Greenfield, 1987).

The amount of variance explained by either of the models suggested here, logistic regression or OLS regression, exceed .729 and .794 respectively; both are statistically significant beyond the .0001 level. As reported in the analysis chapter, the increase in the amount of explained variance is also significant.

The univariate analysis (Table 7, p. 125) indicates that all of the variables except prison population size are significant beyond the $p < .05$ level, and most are significant beyond the $p < .001$ level. Mickey and Greenland (1989) suggest that when building models for logistic regression any variable that exceeds the $p < .25$ level in the univariate analysis should be included in the final multivariate model. The significance level of the variables

195

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
included in Table 7 suggested that they be included in the stepwise OLS regression model. The increase in the explanatory power of the new models over the old indicate that education related variables add a significant amount of explanatory power to a recidivism prediction model.

The third problem, which involves the need for quantification of the subjective criteria used by corrections administrators, is one of the most important. First, there is little evidence that any objective criteria have been consistently used in predicting post-release outcome (Greenfield, 1987). The subjectiveness of presentence completion release decisions to date has led many scholars, parole boards, and correctional researchers to agree that release decisions which are based on predicted outcomes are at times arbitrary, capricious, inconsistent, and prejudiced (American Bar Association, 1968, Champion, 1990; Carter, Glaser, & Wilkins, 1984; Carlson, 1979; Gottfredson & Wilkens, 1978; Greenfield, 1987).

Many of the variables which have been objectified in this dissertation, age, education, gender, employment, and criminal association have been repeatedly documented as being subjectively used by correctional officials for predicting parole outcome. As already discussed, subjective measurements have been unreliable and the validity of
personal observation may be in question with regards to release outcome. The improvement in the predictive model and in the goodness of fit suggests that the new models are an improvement in reliability and validity over the process currently used.

The fourth problem with the current method of recidivism prediction is public protection and offender equality. Generally, there are a large number of offenders being released early while still presenting a significant danger to society. The addition of the variables suggested in this dissertation improved the accuracy of prediction considerably. Using the final logistic regression model (Table 8, p. 128) only 4.3% offenders actually posed a false positive problem.

The solution to each of these problems has been the addition of education related variables which have a grounding in criminological theory. While these variables have not been used in recidivism prediction, each has been repeatedly used in predicting criminal activity. The major concern of correctional officials, when deciding whether to release an offender early or deny release, is the perceived risk of danger the offender presents to the public.

Corrections officials, parole boards, and courts generally use an instrument such as the Salient Factor Score (SFS) along with a subjective evaluation when
considering release decisions. The variables of the subjective evaluation - education level, job holding ability, income - indirectly used in this dissertation have been used by corrections officials and courts for years. Thus, in addition to having a foundation in the criminological literature, the variables suggested in this investigation have an empirical foundation (Monahan, 1981; Gottfredson & Gottfredson, 1986).

Social Control Theory

As individual predictors of post-release outcome, each of the elements of the social bond have indirectly been included in the models presented in this analysis. Using the univariate dated presented in Table 7 the element of the social bond having the greatest level of significance is involvement (education). Education produced a beta coefficient of .650 at a significance level of .0001. Commitment (placement assistance and behavior component) produced beta coefficients of .407 and .160 respectively, both statistically significant at the p < .0001 level. Attachment (program segregation and population segregation) produced beta coefficients of .074 and .096, which are small compared to other social bond elements, but still statistically significant beyond the p < .05 level. Course completion produced a beta coefficient of .115, which was statistically significant at the p < .05 level. When these
variables were added to the OLS regression model, all remained significant with the exception of course completion. However, it must be noted that course completion was significant beyond the $p < .10$ level ($.059$) of significance.

Hirschi (1969) suggest that the relative strength of each of the elements of the social bond is affected by the strength of each of the other elements. This has been empirically validated by these data and the models presented in this dissertation. This would suggest that to eliminate any of the elements simply because of a low level of significance or low beta coefficients would not be appropriate. In light of both the strong levels of significance and Hirschi's theoretical suggestion of an interrelationship of the elements, future research in this area should use all of the elements of the social bond in proposed studies or models.

**Differential Association**

Three measures of association with unconventional (criminal) others were used in this investigation to predict post-release outcome: program segregation, population segregation, and post-release component. The first two, program segregation and population segregation, were two distinct measures of programs that were separated from the general prison population. MacDonald (1989),
Matsueda (1986), and Short (1957) found that as the associations of an individual with unconventional others increased, the likelihood of unconventional activity of the individual was also likely to increase. These findings are supported in this dissertation, but are inverse. As the association of individuals with conventional others increased, recidivism decreased.

The analysis in this dissertation indicates that a reduction in the amount of contact with unconventional others has a significant effect on post-release outcome (beta = -1.549, p < .0001). These results could have two possible explanations. The first possibility is that the effect of non-criminal association has a direct positive influence on the social behavior of the offender. The second possible explanation is that when the offender is released, he/she does not go back into an immediate association with unconventional others because there is no other rational choice; there is no significant net work with unconventional others. When the offender begins to associate with conventional others, there is no support for unconventional activity; thus present positive associations may not lead to future criminal activity. In either case, the association of the offender with significant individuals who are not criminal or who want to change
their behavior appears to be significant in predicting post release outcome.

When this measure of association is inserted into the multivariate model it maintains a high level of predicative significance. Associations of this type have been found in other studies to be significant predictors of future criminality when used in conjunction with the elements of the social bond (MacDonald, 1989; Marcos, et al, 1986). Even Hirschi (1969) indicated that association should have played a greater importance in his work.

The third variable or measure of association uses the amount of post-release contact with conventional others: post-release component. As a measure of association, this variable is similar to differential reinforcement. The analysis section indicated that the amount of post-release contact with conventional others was significant in predicting post-release outcome. When this variable was inserted into the OLS multivariate model, it did not lose any explanatory power. The effect of association with positive others does have the predictive power suggested by the literature. However, data in this study were not separated by offense type. A particular type of crime may not respond as well at predicting future crime and behavior; however, this is doubtful and would violate the
assumptions of the generality of deviance presented thus far.

Overall, all measures of association presented in this dissertation have the expected effect and direction. Thus, the ability of these measures to predict future criminal behavior is concurrent with the ability to predict recidivism.

Age

There are two age points in the life cycle of the offender which have been important in predicting future criminal behavior in past studies. The first is the age of first criminal activity and is often represented by the age of first arrest. The second is the age of the offender at the time of release. Blumstein (1987) and Blumstein, Cohen and Visher (1986) have reported that the earlier in the life cycle that the first criminal activity occurs, the more likely the offender is to continue committing crimes.

These findings have been somewhat reversed in this meta-analysis. When education was used as a predictor variable for total effect size and recidivism, it was shown that the normal crime age curve reverses.

The offender's age at time of release is significant in both the univariate and multivariate logistic analysis as well as the analysis of variance. As the age of the offender, at the time of introduction to education
programs, goes up, the likelihood of failure after release also goes up. In other words, education will have the most significant impact on young offenders. The findings in this study are inverse to the findings of Blumstein (1987), Blumstein, Cohen, and Farrington (1988) and Farrington (1986), which indicate that the best predictor of future criminal activity is the age of the offender at release. However, it should be noted that these studies did not look at the effects of education, nor did they control for different populations.

The findings of this dissertation are similar to the findings of Andrews and Bonta (1994), Andrews and Wormith (1989), and Gendreau and Ross (1987) relative to risk assessment. In this group of studies, these scholars found that the highest degree of rehabilitation success was found among offenders who were at greatest risk and had the greatest need.

Risk, Need, and Responsivity

the three principles of risk, need, and responsivity were effective at rehabilitation and could produce a reduction in recidivism.

The principle of risk states that higher levels of services should be directed to high risk offenders and lower levels of services should be targeted to low risk offenders. High risk offenders require more service because they respond best to programs with more intensity. Low risk offenders do just as well or better in programs that require less involvement. There are two aspects to the risk principle: prediction and matching.

Prediction of risk involves an assessment of risk factors such as personal attributes, attitudes, life style, SES, and circumstances that are partially responsible for current and future criminal behavior. These factors, along with differentiation of risk among offenders, are well researched and have proved effective (Andrews & Bonta, 1994; Andrews, et al, 1990;).

The second factor of risk is matching. Glueck and Glueck (1950) were the first to suggest that the purpose of risk was to identify those cases that were high risk for offending and in need of intensive supervision. Research in this area has shown that providing services for high risk offenders has helped significantly to reduce recidivism, while the same level of service for low risk offenders
increases recidivism. At the same time, in the same studies, low-risk cases with minimal service have reduced recidivism and high-risk cases with minimal service have increased recidivism (Andrews & Bonta, 1994; Bonta, 1996, 1997).

The principle of need states that the needs of the offender must be matched with the service provided. Offenders may have needs that are criminogenic or non-criminogenic, but only programs that target an offender's criminogenic needs will be able to reduce an offender's likelihood to re-offend. Examples of criminogenic needs are positive attitudes about criminal life, criminal associations, substance abuse, problem-solving deficits, education level, and hostility/anger.

Criminogenic needs are a subset of risk factors, but these factors are dynamic attributes of the offender as an individual and his/her current circumstances. Past research, as well as the research presented in this analysis, indicate that changes in criminogenic needs result in a corresponding change in recidivism rates (Andrews & Bonta, 1994; Bonta, 1996, 1997).

The last principle, responsivity, was not addressed in this dissertation, but should be included in this discussion. The responsivity principle matches the styles
and modes of service with the learning styles and abilities of the offender. Offenders are human beings, and, therefore, the most powerful and influential strategies will involve behavioral, cognitive behavioral, and social learning approaches. An in-depth look at the potential of responsivity is discussed by Andrews, Bonta, and Hoge (1990).

As a final note, Bonta (1997) found that conducting treatment or programs in a structured manner, according to the three principles outlined above, and with an enthusiastic and dedicated staff, will improve the overall effect. Bonta termed this the "fourth principle" and labeled it the "principle of program integrity."

**Education**

Most of the research conducted using the risk, need, and responsivity principles has been associated with mental health services. In this dissertation, it has been shown that these principles also apply with regards to education.

As a sole measure of post release outcome, education explains much of the variance in recidivism. The results of the univariate analysis indicated that education is significant as an explanatory variable (beta = .650, p < .0001). When education is included in both the logistic regression and the OLS regression multivariate analysis; the explanatory power increases. The effect of education on
recidivism is in the predicted direction, and its explanatory power within this data set has been experienced by other studies (Champion, 1990; Gottfredson, 1979; Gottfredson & Wilkins, 1978).

The central finding of this study is that educational attainment while incarcerated does make a significant difference to offenders when they return to their communities.

Educational attainment while incarcerated is positively related to success in obtaining employment and successful completion of probation. The higher the level of educational attainment while incarcerated, the more likely the offender is to have obtained employment upon release. These findings are similar to those obtained in other studies (Federal Bureau of Prisons, 1991; Jenkins, Steurer, & Pendry, 1995; Thorpe, 1984).

In addition to the attempts of this study to investigate the impact of educational attainment on the post release success of inmates, the correlation of the outcome variable to demographic variables in the study is both encouraging and informative.

In terms of race, the differences are major and encouraging. Nonwhite prison education completers, at the GED and below level, are substantially more likely to have succeeded after release than both the control group and

207

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
Whites in general. It appears that education becomes a moderating variable between the stigma associated with being incarcerated and the stigma of minority status.

In terms of age, younger inmates are much more likely to benefit from prison educational opportunities than their elderly counterparts. Finally, in terms of gender, women out perform males almost two to one.

For example, the expense of providing education to inmates is minimal when considering the impact upon rates of recidivism and the future savings of preventing re-arrest and re-imprisonment. Louisiana Department of Corrections estimates that it cost $1,250 per year, per individual to provide basic education in a Louisiana correctional facility. In contrast, the average cost of incarcerating an adult inmate per year is $23,000 (Louisiana Department of Corrections, 1997).

Even in a hypothetical situation, with a comparatively inexpensive correctional education program such as Louisiana, the savings obtained from providing education are still substantial. Assuming a recidivism rate of 58% (Rate of Louisiana 1989) a 10% reduction in recidivism will save Louisiana taxpayers 16.67 million dollars each year.

In addition to the millions saved by preventing an individual’s return to incarceration and dependence on the criminal justice system, providing education to prisoners
can save money in other ways. The prevention of crime helps to eliminate cost to crime victims and the court system, lost wages and paid taxes of the inmate while incarcerated, or cost to the inmate's family.

**Theoretical Implications**

Previous research on crime and recidivism indicates that the variables which have been utilized in the models of this dissertation have had significant value in the prediction of prior criminality. Hirschi (1969), MacDonald (1989), and Marcos (1986) have found that each of the elements of the social bond have relevance in predicting the incident of future deviance, criminal activity, or drug use. Each of the elements has been found to be interrelated with each other, but not to the point of causing problems with coliniarity. The strongest of the elements in each case has been involvement (education). The results of this research suggest that social control theory has significant value in the prediction of post release outcome.

In this investigation involvement in conventional activities (education and job placement) have the strongest effects on recidivism rates. While this might differ slightly from Hirschi's findings, the explanations could be found in the age groupings of individuals and their current status. Hirschi's study involved juveniles still living with their respective parents, while this study involved
adults who were incarcerated and finally released. It would seem likely that incarcerated adult offenders would be more likely to be affected by education and employment potential than unincarcerated delinquent juveniles.

Attachment, the strongest element in Hirschi's study, was not the strongest in this investigation. However, it was still strong and significant in both univariate and multivariate analysis. Attachment, for this investigation, was measured by population segregation, program segregation, and post release component.

Differential association theory has had a long and significant history in explaining and predicting criminal behavior (MacDonald, 1989; Marcos, et al., 1986; Short, 1957; Sutherland, 1947; Sutherland & Cresses, 1978; Vold & Bernard, 1986; Voss, 1964). The findings in this investigation suggest that variables measuring association can add to the predictive power of a recidivism model. The measures of conventional association - population segregation, job placement, and post-release component - used in this study were significant predictors of recidivism. Other measures of association which have been used in the past, family involvement, prior convictions, number of family members involved in crime, were not available for this investigation. However, overall the effects of association with significant others, either
positive or negative, are good indicators of post-release outcome; and differential association continues to live up to its reputation as a measure of future criminal activity.

From the results of this dissertation the use of the criminal career's approach as a predictor of future criminal activity is unique and very favorable. The uniqueness of this approach lies in the fact that the approach makes no attempt at explaining the cause of crime, only the duration and end of the career. From a rehabilitation standpoint this approach becomes very significant and positive.

Each of the variables utilized in this dissertation have had relatively strong histories in predicting future criminal activity. This same success appears to be applicable to the prediction of recidivism rates. This would suggest that the use of criminological theory as grounding for correctional policy has some positive implications.

Policy Implications

In theory development researchers are normally attempting to accomplish three functions: explain, predict, and control. If society can explain and predict, then there is a possibility for control. The only issue left involves the ethics of the approach, which has, for the purpose of this dissertation, been discussed previously. The control
objective in recidivism prediction concerns a balance between the objective of public safety, expenditures of public resources, and humane punishment and rehabilitation for the offender.

After Martinson reported (1974) that nothing worked, there was a shift from the medical model to the justice, or incarceration model in corrections. Blumstein (1986) indicates that incapacitation of offenders works, but at an extreme cost.

Under 1970 incarceration policies, incapacitation was estimated to have reduced the number of FBI index crimes by 10 to 20 percent. For robberies and burglaries, incapacitation was estimated to have reduced their number by 25-35 percent in 1973; in 1982, after the national inmate population had almost doubled, the incapacitative effect for these offenses is estimated to have increased to about 35-45 percent. For general increases in incarceration to reduce index crime by an additional 10 to 20 percent from the 1982 level, the inmate population would again have to more than double (Blumstein, 1986, p.6).

Blumstein goes on to note that the extent of general incarceration needed to achieve the estimated reduction in crime is not socially acceptable. His proposal involves selective incapacitation of inmates, which includes the continued incarceration of inmates classified as high risk. This contradicts the research of scholars such as Andrews, Bonta and Hoge (1990), Andrews, et al (1990), Andrews and Bonta (1994), and Bonta (1997).
Blumstein (1986) estimated that selective incapacitation policies involving increases in the total inmate population of as little as ten to twenty percent can achieve results similar to the general incarceration rates. According to Blumstein, selective incapacitation policies can offer an attractive tradeoff between crime reduction and inmate population increases. The major ethical issue surrounding these policies would involve the development of a predictive model of offender dangerousness, which could be a difficult task.

From this point of view, one of the possible policy implications emanating from this investigation is the development of an education model which may be used to selectively incapacitate offenders until they become educated to a given point of achievement or serve their sentences to completion, whichever comes first. This approach serves the public's need for security from criminal activity and meets the needs of those offenders presenting a high risk of recidivating. A prediction model, such as the one presented here, also entails policy implications for low risk offenders.

It is common knowledge that low risk offenders present little danger to the public; however, once they have received a measured form of punishment, their release should be as speedy as possible to prevent the reverse
effects of differential association. Two purposes could be served by their early release. The first is the avoidance of the negative effects of an extended prison term on the offender. The second is a reduction of prison overcrowding.

Final Synopsis and Implications

This research effort has attempted to make a sociological analysis of the potential relationship between select education variables, operating in the correctional environment, which were hypothesized to be related to recidivism. This investigation began with a meta-analysis of education/recidivism studies conducted between 1980 and 2000.

One hundred twenty-four (124) studies were included in this research investigation. This collection of studies produced three hundred twenty-nine (329) effects between education and recidivism. Each of the studies selected contained an education program with offenders as students and a control group, even though in some cases the control group was not directly part of the study population, but rather state or national recidivism rates. The education programs represented in this investigation included literacy, Adult Basic Education (ABE), General Education Development (GED), higher education, and vocational. Studies were divided into four institutional categories:
maximum security, medium security, minimum security, and prerelease.

This research began by attempting to discern the relationship between education and recidivism. This relationship was further defined as the gain, or decrease, in recidivism rates based on participation in educational programs within a penal institution. For this analysis, offenders or inmates were grouped into two categories: program participants and controls. Their gain score was derived by the difference between their respective recidivism rates.

Several statistical tools were utilized in the analysis of these data. Descriptive information was presented according to the means and frequency distributions of individual variables obtained from each study in the sample. Chi square test and correlation measures, both Pearson correlation's and partial correlation's, were used when appropriate. Logistic regression analysis, Ordinary Least Squares (OLS) regression analysis, and analysis of variance were used to test the research hypotheses presented in chapter IV. These measures provided a means to determine the potential relatedness between select independent variables and the primary dependent variable (recidivism).
A strong relationship was found to exist between the variables considered in the educational environment and the offenders actual post-release performance. Several variables indicated strong categorical relationships and warranted additional attention through analysis of variance. These variables generally were found in the area of individual characteristics, such as age groupings, race, and gender. These differences suggest that individual characteristics and their background tend to have unique effects on the offenders performance and subsequent behavior after release.

This particular research effort, even though a meta-analysis, was primarily exploratory in nature. Hence, it is possible that there are other variables which might be considered important for a complete assessment of the relationship between corrections education and recidivism. The variables selected for this investigation show a strong degree of relatedness to recidivism. However, would the relationships remain if the data were collected from different locations, with different age groupings, or by other researchers from different disciplines?

The fail-safe number for this meta-analysis was 916. This number represents the number of studies with a zero effect size that would be needed to make the results no longer statistically significant at the $p < .05$ two-tailed
level. Even though this is encouraging, before these questions could truly be answered, further research might be warranted.

**Application of the Findings**

Even though this research has revealed a number of positive findings with direct applications, the information presented here can also be valuable in pointing the way for more investigations in correctional education. However, there are immediate uses of the results. The information presented in this study concerning correctional education may help administrators in selecting different and more effective educational experiences for many offenders.

It has been ascertained from this study that offenders are going to respond to the learning environment differently at different stages of the programs because of their varied educational, personal, and socioeconomic backgrounds. Thus, if the prison environment of the inmates is better understood in operational terms, this may provide educators and correctional officials with a better understanding of the challenges facing offenders in society. With increased awareness of individual problems during the early stages of their rehabilitation, appropriate remedial measures could be initiated at the early stages of the correctional education process.
Information regarding the educational patterns and environment in prisons can provide a new interpretation of the educational aspirations of culturally disadvantaged offenders. If offenders have comparable socioeconomic backgrounds - as seen in this study - and yet differ markedly in their post-release performance in society, a comparison of their prison environments and participation in education programs should provide probable explanations for these differences.

Further research in this area could be beneficial for offenders, corrections, and society. Since the success of the institution in promoting the educational development of offenders may largely depend upon favorable experiences after release and within society, efforts directed at educating society on how it can better provide a stimulating environment would be worthwhile.

However, the purpose of this investigation was not to pass judgment on individuals, institutions, or society. The problems of the disadvantaged offender have been perpetual ones, and their effects, in terms of the loss of human potential, are acknowledged; however, what too often is not recognized are some of the various methods by which these problems might be averted. This research adds to a body of developing knowledge concerning the many challenges that
confront those who seek a better understanding of corrections and offenders in our society.

Implications for Further Research

Many of the studies on correctional education that have been conducted so far tend to be lacking in methodological precision. Further attention needs to be paid to a more rigorous definition of the nature of the problem and samples. Many studies have been based on weak research techniques with insufficient consideration given to issues of reliability and program bias. While valuable insight may be gained from many of these investigations, there is a tendency to make global generalizations that lack adequate support.

This dissertation has attempted to explore the possibility of identifying and empirically analyzing select educational variables that seem to constitute a portion of the rehabilitation environment in prisons. Consequently, an investigation was made to relate specific correctional educational variables to post-release outcome (recidivism).

It would seem appropriate that future research efforts in this area might begin with a replication of parts of the present study that would include different sub-samples, different age groups, and other settings.

At this time, more longitudinal studies are needed in order to obtain evidence about the possible interactions
between the offender and his/her educational experience within the corrections system. This could provide additional insight regarding effective programs for grouping offenders according to their expected achievement based on some type of individual profile.

One of the assumptions upon which the present investigation has been based was the stability, or instability, of the educational environment within the prison. This component of the total learning environment further investigation, and should be analyzed through additional longitudinal studies, cross-sectional studies, and qualitative studies.

Additional studies might provide further understanding about the influence of the educational programs in the prison at different stages of instruction. This in turn may reflect upon education's potential usefulness for in-prison behavior prediction. Furthermore, other aspects of the prison, such as the physical environment, social environment, and management structure could also be analyzed and their relationship and interaction with education explored.

Since there are many components to an individual's educational experience, future research could also focus on those components that are operative inside the prison structure. This might begin with an investigation of the
prison environment, corrections officers, or the educational experiences gained in the offenders peer group.

Visits from scholars, business leaders, and exposure to successful people may also affect the offender's learning experience inside prison. An identification and measurement of these contacts could provide valuable information concerning the effect these interfaces may have on the offender's general learning ability and recidivism.

Research in corrections education should also be extended beyond one cultural setting; consequently, the relationship between education in prison and post-release social achievement of the offender may be studied in different cultural and ethnic groups as well as by gender. Studies of this nature could provide a multicultural perspective into the differences, if any, in the environmental variables that constitute the educational experiences in different cultures.

Studies and experiments need to be repeated with different groups of subjects, with different staff compositions, and in different parts of the country in order to find out whether or not the service methodology has general application.

Finally, there is a substantial need for research aimed at finding out whether specific education programs actually make a difference in the social development of
offenders. However, this kind of evaluation procedure should include mixed discipline teams such as psychology, education, sociology, and economics. This would provide a more meaningful analysis since a comparison could be made between the findings of this dissertation and those obtained utilizing combinations of other disciplines.

Summary

There were two primary goals for this research. First was the development of a model of recidivism prediction which could overcome the problems of subjectivity, inaccuracy, invalidity, and unfairness in currently used prediction methods. Second was to determine what significance education played in reducing recidivism and ending criminal careers.

The results of this research indicated that propositions mentioned in chapter II and the hypothesis set forth in chapter IV were found to be in the expected direction and were related to recidivism reduction. Although some of the measures were not as statistically significant as might be desired, each was found to cumulatively add to the predictive power of the models to such an extent that over a three hundred percent increase in explanatory power was realized.

The elements of the social bond and differential association have proved to be important predictors for
future criminal activity or inactivity. As indicators of recidivism, the addition of these variables grounded in criminological theory met the task presented and add significant predictive value to an education model of recidivism prediction.

The criminal careers approach uses participation, start of criminal career, duration and cessation of participation to predict the extent of the career. The major components of the criminal careers approach, such as age, education, and employment, have been used as predictors of continued criminal activity. These same variables add significant predictive powers to the recidivism models presented here.

Continued research is clearly needed in the development of predictive models in criminology; however, the use of criminological theory in order to solve concrete correctional policy problems does have promise.

There is a false perception among academicians that policy makers and practitioners largely ignore research findings (Petersilia, 1991). Petersilia, also reports that policy makers tend to see academicians as people with their heads in the clouds. The assumption taken in this dissertation is that theoretical criminology may have more to offer policy makers than is typically recognized by either group. The correct path appears to be the one
suggested by Quinney and Wildeman (1991) in which the recognition of concrete problems rather than the development of a single theoretical perspective is preferred. The approach used in this dissertation has been to develop the problem and then use the appropriate theories and perspectives to solve the problem. Thus the goal has been to use the additive powers of the various approaches rather than to find the single most powerful explanatory approach.

The findings in this dissertation suggest that education can be used successfully to predict the continuation of an already existing criminal career. More importantly; however, education can also be used to terminate a criminal career.
REFERENCES

General References


Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.


One America, Inc. (1980). A Descriptive Study of Vocational Education Programs in Nine Correctional Institutions for Women. Washington, DC:


242


Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
Meta-Analysis References


245

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.


Black, L. R., (1996). "Exemplary programs make all participants winners" *Corrections-Today*. v.58 Aug. p. 84-93


246


Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.


248

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.


249

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.


250


Kerka, S. (1995). Prison Literacy Programs. ERIC Digest No. 159. ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, OH. Eric Database ED383859


Lanaghan, P. (1998), The Impact of Receiving a General Equivalency Diploma while Incarcerated on the Rate of Recidivism. Master of Science in Education Project, Franciscan University of Steubenville.Eric Data Base ED416406


254

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.


257


Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
APPENDIX A
REGIONAL MAP

Region:
1 - North east
   Connecticut
   Delaware
   Maine
   Maryland
   Massachusetts
   New Hampshire
   New Jersey
   New York
   Ohio
   Pennsylvania
   Rhode Island
   Vermont

Region:
2 - South East
   Florida
   Georgia
   Kentucky
   North Carolina
   South Carolina
   Tennessee
   Virginia
   West Virginia

Region:
3 - North Central
   Illinois
   Iowa
   Kansas
   Michigan
   Minnesota
   Missouri
   Nebraska
   Wisconsin

Region:
4 - South Central
   Alabama
   Arkansas
   Louisiana
   Mississippi
   Oklahoma
   Texas

Region:
5 - North West
   Idaho
   Montana
   North Dakota
   Oregon
   South Dakota
   Washington
   Wyoming

Region:
6 - South West
   Arizona
   California
   Colorado
   Nevada
   New Mexico
   Utah

Region:
7 - Canada

Region:
8 - National
APPENDIX B CORRELATION MATRICES

B-1 INSTITUTIONAL FACTORS CORRELATIONS

<table>
<thead>
<tr>
<th>Pearson Correlation Coefficients r</th>
<th>Education level</th>
<th>Effect Size</th>
<th>Institution Type</th>
<th>Location of Study</th>
<th>Population Mean Age</th>
<th>Program Funding</th>
<th>Program Segregation</th>
<th>Recidivism Period</th>
<th>Recidivism Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>.588**</td>
<td>-.055</td>
<td>.021</td>
<td>-.268**</td>
<td>-.187**</td>
<td>.193**</td>
<td>.194**</td>
<td>.446**</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institution Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of Study</td>
<td>.021</td>
<td>-.033</td>
<td>.113</td>
<td>1.000</td>
<td>.030</td>
<td>.173**</td>
<td>-.004</td>
<td>.241**</td>
<td>-.051</td>
</tr>
<tr>
<td>Population Mean Age</td>
<td>-.268**</td>
<td>-.227**</td>
<td>.099</td>
<td>.030</td>
<td>1.000</td>
<td>.203**</td>
<td>-.108</td>
<td>-.039</td>
<td>-.170*</td>
</tr>
<tr>
<td>Program Funding</td>
<td>-.187**</td>
<td>-.103</td>
<td>.216**</td>
<td>.173**</td>
<td>.203**</td>
<td>1.000</td>
<td>.168*</td>
<td>-.111</td>
<td>-.082</td>
</tr>
<tr>
<td>Program Segregation</td>
<td>.193**</td>
<td>.168**</td>
<td>.269**</td>
<td>-.004</td>
<td>-.108</td>
<td>.168*</td>
<td>1.000</td>
<td>.124</td>
<td>.101</td>
</tr>
<tr>
<td>Recidivism Period</td>
<td>.194**</td>
<td>.008</td>
<td>-.051</td>
<td>.241**</td>
<td>-.039</td>
<td>-.111</td>
<td>.124</td>
<td>1.000</td>
<td>.036</td>
</tr>
<tr>
<td>Recidivism Rate</td>
<td>.446**</td>
<td>.766**</td>
<td>-.061</td>
<td>-.051</td>
<td>-.170*</td>
<td>-.082</td>
<td>.101</td>
<td>.036</td>
<td>1.000</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
### B-2 INDIVIDUAL FACTORS CORRELATIONS

#### Pearson Correlation Coefficients *r*

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Effect Size</th>
<th>Education level</th>
<th>Gender</th>
<th>Race</th>
<th>Recidivism Period</th>
<th>Recidivism Rate</th>
<th>Education Success</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pearson Correlation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>1.000</td>
<td>-.194**</td>
<td>-.269**</td>
<td>.046</td>
<td>.192**</td>
<td>-.092</td>
<td>-.135</td>
<td>-.209**</td>
</tr>
<tr>
<td>Effect Size</td>
<td>-.194**</td>
<td>1.000</td>
<td>.588**</td>
<td>.126*</td>
<td>-.086</td>
<td>.008</td>
<td>.766**</td>
<td>.591**</td>
</tr>
<tr>
<td>Education level</td>
<td>-.269**</td>
<td>.588**</td>
<td>1.000</td>
<td>.079</td>
<td>-.203**</td>
<td>.194**</td>
<td>.446**</td>
<td>.400**</td>
</tr>
<tr>
<td>Gender</td>
<td>.046</td>
<td>.126*</td>
<td>.079</td>
<td>1.000</td>
<td>.037</td>
<td>.126*</td>
<td>.045</td>
<td>.126*</td>
</tr>
<tr>
<td>Race</td>
<td>.192**</td>
<td>-.086</td>
<td>-.203**</td>
<td>.037</td>
<td>1.000</td>
<td>-.091</td>
<td>-.069</td>
<td>-.151*</td>
</tr>
<tr>
<td>Recidivism Period</td>
<td>-.092</td>
<td>.008</td>
<td>.194**</td>
<td>.126*</td>
<td>-.091</td>
<td>1.000</td>
<td>.036</td>
<td>-.010</td>
</tr>
<tr>
<td>Recidivism Rate</td>
<td>-.135</td>
<td>.766**</td>
<td>.446**</td>
<td>.045</td>
<td>-.069</td>
<td>.036</td>
<td>1.000</td>
<td>.594**</td>
</tr>
<tr>
<td>Education Success</td>
<td>-.209**</td>
<td>.591**</td>
<td>.400**</td>
<td>.126*</td>
<td>-.151*</td>
<td>-.010</td>
<td>.594**</td>
<td>1.000</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).
B-3 PROGRAM FACTORS CORRELATIONS

<table>
<thead>
<tr>
<th>Pearson Correlation Coefficients $r$</th>
<th>behavior Component</th>
<th>Course Completion</th>
<th>Effect Size</th>
<th>Placement Assistance</th>
<th>Population Segregation</th>
<th>Population Type</th>
<th>Post Release Component</th>
<th>Program Segregation</th>
<th>Type of Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>-.112</td>
<td>.125*</td>
<td>.099</td>
<td>.354**</td>
<td>.098</td>
<td>.145*</td>
<td>.301**</td>
<td>.209**</td>
</tr>
<tr>
<td>Course Completion</td>
<td>-.112</td>
<td>1.000</td>
<td>.396**</td>
<td>.287*</td>
<td>.279*</td>
<td>.313**</td>
<td>.223</td>
<td>.321*</td>
<td>-.076</td>
</tr>
<tr>
<td>Effect Size</td>
<td>.125*</td>
<td>.396**</td>
<td>1.000</td>
<td>.535**</td>
<td>.277**</td>
<td>.149*</td>
<td>.176**</td>
<td>.168**</td>
<td>.014</td>
</tr>
<tr>
<td>Placement Assistance</td>
<td>.099</td>
<td>.287*</td>
<td>.535**</td>
<td>1.000</td>
<td>.214**</td>
<td>.015</td>
<td>.510**</td>
<td>.273**</td>
<td>.004</td>
</tr>
<tr>
<td>Population Segregation</td>
<td>.354**</td>
<td>.279*</td>
<td>.277**</td>
<td>.214**</td>
<td>1.000</td>
<td>.324**</td>
<td>.194**</td>
<td>.579**</td>
<td>.101</td>
</tr>
<tr>
<td>Population Type</td>
<td>.098</td>
<td>.313**</td>
<td>.149*</td>
<td>.015</td>
<td>.324**</td>
<td>1.000</td>
<td>.179**</td>
<td>.164**</td>
<td>.116</td>
</tr>
<tr>
<td>Post Release Component</td>
<td>.145*</td>
<td>.223</td>
<td>.176**</td>
<td>.510**</td>
<td>.194**</td>
<td>.179**</td>
<td>1.000</td>
<td>.328**</td>
<td>.146*</td>
</tr>
<tr>
<td>Program Segregation</td>
<td>.301**</td>
<td>.321*</td>
<td>.168**</td>
<td>.273**</td>
<td>.579**</td>
<td>.164**</td>
<td>328**</td>
<td>1.000</td>
<td>-.062</td>
</tr>
<tr>
<td>Type of Program</td>
<td>.209**</td>
<td>-.076</td>
<td>.014</td>
<td>.004</td>
<td>.101</td>
<td>.116</td>
<td>.146*</td>
<td>-.062</td>
<td>1.000</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).
# B-4 METHODS FACTORS CORRELATIONS

## Pearson Correlation Coefficients $r$

<table>
<thead>
<tr>
<th></th>
<th>Effect Size</th>
<th>Recidivism Rate</th>
<th>Displine of Pl</th>
<th>Document Type</th>
<th>Evaluation</th>
<th>Method Strength</th>
<th>Location of Study</th>
<th>Study Significance Level</th>
<th>Type of Study Agency</th>
<th>Year of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>3.000</td>
<td>.766**</td>
<td>.055</td>
<td>-.040</td>
<td>-.074</td>
<td>-.510**</td>
<td>-.033</td>
<td>-.046</td>
<td>.056</td>
<td>-.047</td>
</tr>
<tr>
<td>Recidivism Rate</td>
<td>.766**</td>
<td>1.000</td>
<td>.030</td>
<td>-.133*</td>
<td>-.095</td>
<td>-.507**</td>
<td>-.051</td>
<td>.014</td>
<td>.151**</td>
<td>-.089</td>
</tr>
<tr>
<td>Displine of Pl</td>
<td>.055</td>
<td>.030</td>
<td>1.000</td>
<td>.171**</td>
<td>.262**</td>
<td>-.104</td>
<td>.049</td>
<td>-.243**</td>
<td>.223**</td>
<td>-.004</td>
</tr>
<tr>
<td>Document Type</td>
<td>-.040</td>
<td>-.133*</td>
<td>.171**</td>
<td>1.000</td>
<td>.223**</td>
<td>.207**</td>
<td>-.218**</td>
<td>.041</td>
<td>.135*</td>
<td>.141*</td>
</tr>
<tr>
<td>Evaluation</td>
<td>-.074</td>
<td>-.095</td>
<td>.262**</td>
<td>.223**</td>
<td>1.000</td>
<td>.094</td>
<td>-.040</td>
<td>.022</td>
<td>.404**</td>
<td>-.416**</td>
</tr>
<tr>
<td>Method Strength</td>
<td>-.510**</td>
<td>-.507**</td>
<td>-.104</td>
<td>.207**</td>
<td>.094</td>
<td>1.000</td>
<td>-.278**</td>
<td>.129*</td>
<td>.136*</td>
<td>.072</td>
</tr>
<tr>
<td>Location of Study</td>
<td>-.033</td>
<td>-.051</td>
<td>.049</td>
<td>-.218**</td>
<td>-.040</td>
<td>-.278**</td>
<td>1.000</td>
<td>-.221**</td>
<td>-.286**</td>
<td>-.019</td>
</tr>
<tr>
<td>Study Significance Level</td>
<td>-.046</td>
<td>.014</td>
<td>-.243**</td>
<td>.041</td>
<td>.022</td>
<td>.129*</td>
<td>-.221**</td>
<td>1.000</td>
<td>.091</td>
<td>-.080</td>
</tr>
<tr>
<td>Type of Study Agency</td>
<td>.056</td>
<td>.151*</td>
<td>.223**</td>
<td>.135*</td>
<td>.404**</td>
<td>.136*</td>
<td>-.286**</td>
<td>.091</td>
<td>1.000</td>
<td>-.244**</td>
</tr>
<tr>
<td>Year of Study</td>
<td>-.047</td>
<td>-.089</td>
<td>-.004</td>
<td>.141*</td>
<td>-.416**</td>
<td>.072</td>
<td>-.019</td>
<td>-.080</td>
<td>-.244**</td>
<td>1.000</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).
APPENDIX C
VARIABLES AND
OPERATIONALIZED DEFINITIONS

Age - This variable is continuous and represents the mean age in years of the group under study.

Agency - This is a categorical variable which identifies the type of agency conducting the study. In most cases it is the agency where the principle investigator was employed. There are five possible categories:

1 = University
2 = Government (non-penal)
3 = Penal
4 = Professional Consultant
5 = Other

Behavior Component - This variable was coded on the presence or absence of behavioral treatment in the program. This could include radical behavioral therapy, cognitive behavioral therapy, and social learning therapy. The variable is dichotomized as 0 = No therapy and 1 = therapy.

Control Group - This variable is a categorical variable that indicates the presence or absence of a control group and the type of control group. There are four categories:

1 = Control from study population
2 = no control at all
3 = National level control
4 = State level control

Course Completed - In some cases studies reported rates for completers of programs along with non-completers. This variable is a dichotomized variable indicating the completion or non-completion of a program.

0 = No - did not complete program
1 = yes - did complete program

Course Completion Percentage - This variable is used in conjunction with the course completed variable. It is a continuous variable with a theoretical range from 0% to 100%. It indicates the amount of the program an individual or group completed.
Document Type - This is a categorical variable which indicates the type of document reporting the results of the study. There are five categories in this variable:

1 = Peer Reviewed Journal  
2 = Government Document  
3 = Interagency Report  
4 = Dissertation or Thesis  
5 = Trade Journal

Discipline - This is a categorical variable which indicates the discipline in which the principle investigator was employed. There are six categories for this variable:

1 = Education  
2 = Sociology  
3 = Social Work  
4 = Psychology  
5 = Criminal Justice  
6 = Other

Evaluation - This is a dichotomous variable and indicates if the study was part of a formal evaluation of the education program.

0 = No  
1 = Yes

Effect Size - This is a continuous variable with a theoretical range from -3.0 to +3.0. This variable was calculated using the META program and the statistics reported in the final report of the study.

Gender - This is a dichotomous variable which indicates the gender of the study population.

0 = Male  
1 = Female

Institution Type - This variable indicated the type of institution in which the program took place. There were five levels of classification:

1 = Maximum Security  
2 = Medium Security  
3 = Minimum Security  
4 = Prerelease  
5 = Community Corrections

266

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
In some cases a penal institution is so large that three or more classifications are possible within the institution itself. In those cases the institution is classified at the highest ranking (lowest number).

**Location** - This variable is a categorical variable with eight possible choices. The United States was broken down into six geographical locations as indicated below. In addition some studies were based on a U.S. national data base and others were conducted in Canada. The eight categories are as follows:

1 = North East  
2 = South East  
3 = North Central  
4 = South central  
5 = North West  
6 = South West  
7 = US National  
8 = Canada

**Methodology Strength** - This is a categorical variable which indicates the overall strength of the study methodologically. There are four categories in this variable:

1 = Strong  
2 = Moderate  
3 = Weak  
4 = No Scientific Value

**Placement Assistance** - This is a dichotomous variable which indicates if job placement assistance was part of the education program. In those cases where the final report did not indicate placement assistance it was assumed that placement assistance did not exist.

0 = No placement assistance  
1 = Placement assistance.

**Population Age** - This variable is a continuous variable with a theoretical range from 17 to 100. It represents the mean age of the institution where the program study was conducted. Population Age is different from study group age.

**Population Size** - This is a continuous variable which indicates the size of the study population.
Population Segregation - This is a dichotomous variable which indicates segregation of the student population from the general prison population during and after program hours. See program segregation also.

0 = student population was not segregated
1 = student population was segregated

Population Type - This is a categorical variable which indicates the type of population of the institution and not necessarily the type of population for the program. There are four categories for this variable.

1 = Adult Male
2 = Adult Female
3 = Mixed
4 = Juvenile Male

Post Release Component - This is a dichotomous variable which indicates the presence or absence of post release support. This could include additional job placement, drug counseling, or community support groups. It does not include post release intervention of probation officers.

0 = no post release intervention
1 = post release intervention

Program Funding - This is a categorical variable which indicates the major source of funding for the program. There are five categories for this variable:

1 = State Department of Corrections
2 = State department of Education
3 = Federal Grant
4 = Local Government
5 = Private

Program Segregation - This is a dichotomous variable which indicates if the education program was segregated from the general prison population during program hours. (See also Population Segregation)

0 = No segregation
1 = Segregation
Program Type - This is a categorical variable which indicates the type of education program conducted. There are seven categories in this variable:

1 = Literacy program
2 = (ABE) Adult Basic Education
3 = (GED) General Educational Development
4 = Vocational
5 = Higher Education
6 = Life Skills
7 = Multiple

Race - This is a categorical variable which indicates the race of the study group or control group. There are four categories in this variable. In those cases where the race of the group was not indicated it is assumed that the group is mixed (Black, White, & Other)

1 = Black
2 = White
3 = Other
4 = Mixed

Recidivism Period - This is a categorical variable which indicates the period of time during the study period or the period of time which the study reviewed offender records. There are four categories for this variable:

1 = 0~6 months
2 = 6~12 months
3 = 12~24 months
4 = >~24 months

Recidivism Rate - This is a continuous variable which indicates the percentage of inmates in each group who recidivate.

Recidivism Reduction Rate - This is a continuous variable which represents the difference between a treatment groups recidivism rate and the control groups recidivism rate.

Statistic Type - This is a categorical variable which indicates the primary type of statistic used to calculate the effect size. There are seven categories in this variable:

1 = t statistic
2 = F statistic
3 = r Pearson correlation coefficient
4 = d effect size
5 = chi square
6 = $p$ proportional statistic
7 = $Z$ statistic

**Study Funding** - This is a categorical variable which indicates the source of funding for the study, not the program. There are Six categories in this variable:

1 = Principle Investigator
2 = Agency (conducting program)
3 = State
4 = Federal
5 = Private
6 = Local

**Study Significance** - This is a categorical variable which indicates the primary significance of the study. There are five categories in this variable:

1 = study was positive and statistically significant
2 = study was positive but not significant
3 = study was negative and statistically significant
4 = study was negative but not significant
5 = study was neutral

**Study Significance Level** - This is a continuous variable which indicates the significant level of the study significance testing. The normal range will be from .10 to .0001.

**Year** - This is a continuous variable which indicates the year the study was conducted or the year the study was published. Most often it is the year the study was published or released. The range is from 1980 to 2000.
APPENDIX D
SAMPLE CODE SHEET

Study Number: __________ Coder: ______ Date of Coding: ______
Study Title: ________________________ Author: __________________
Document Type: ______ Discipline: ______

Year of Study: ______ U.S. Location of Study: _____ Type of Agency: _____
Methodology Strength: ______ Study SIG: ______ Study Sig Level: ______
Recidivism Period: ______ Control GP: _____ Evaluation: ______
Study Funding: ______ Institution Type: ______ Pop. Type: ______
Pop. Size: ___ Pop. Age: ___ Race: ___ Gender: ___ Age: ___
Program Funding: ______ Type Program: ______ Behavior Comp: ______
Pop. Segregation: ___ Program Segregation: ___ Placement Assistance: ___
Post Release Component: _____ Course Complete: ___ Complete %: ___
Recidivism Rate: ___ Recidivism Reduction Rate: ___

Comments:

1) Statistic Type: ___ Effect Size: ___
2) Statistic Type: ___ Effect Size: ___
3) Statistic Type: ___ Effect Size: ___
4) Statistic Type: ___ Effect Size: ___
5) Statistic Type: ___ Effect Size: ___
6) Statistic Type: ___ Effect Size: ___
7) Statistic Type: ___ Effect Size: ___

271

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
VITA

Ronald Edward Wells was born February 1, 1950, in Donaldsonville, Louisiana. In 1959, his family established residence at Gonzales, Louisiana, where he spent the remainder of his childhood and completed his elementary and secondary education.

He graduated from East Ascension High School, in 1968, and in the fall of that year entered Southeastern Louisiana University. His college studies were interrupted due to depletion of finances and induction into military service. He served in the United States Army from 1969 until his discharge in 1973 which included three tours overseas.

In March, 1973, after discharge from the Army, he was employed by the Ascension Parish Sheriff's Office as a deputy sheriff and promoted to detective in December, 1973, and held that position until June, 1975.

From June, 1975, until September, 1980, he was employed by several different corporations as an inspection consultant. In September, 1980, he became cofounder of NDT Research, Inc. of Baton Rouge, Louisiana, a company founded in Louisiana to design and supply test instrumentation to the military aerospace
industry. After serving as President and CEO for seven years, NDT Research, Inc., was sold in 1989.

In June, 1990, he became employed as a flight instructor for Shields Aviation, and promoted to Captain in November, 1990. In April, 1991, he transferred to Horizon Aviation in Baton Rouge, as a CEO.

In June, 1994, he entered Louisiana State University and completed requirements for the bachelor of arts degree in August 1997, graduating Summa Cum Laude. He enrolled as a graduate student in the Department of Sociology at Louisiana State University in August, 1997, and graduated with a master of arts degree in sociology in December, 1998.

In August, 1998, the author continued his graduate education in the doctoral program of higher education administration, extending his research into the corrections education environment. He is presently a candidate for the degree of Doctor of Philosophy, which will be awarded in August, 2000.
DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Ronald E. Wells

Major Field: Educational Leadership, Research and Counseling

Title of Dissertation: Education as Prison Reform: A Meta-Analysis

Approved:

[Signatures]

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

[Signatures]

Date of Examination:

June 2, 2000