EXAMINATION OF THINKING ERROR AND THE RESPONSIVITY PRINCIPLE IN A COGNITIVE-BEHAVIORAL INTERVENTION FOR OFFENDERS: IMPLICATIONS FOR CRIMINAL JUSTICE POLICY

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EXAMINATION OF THINKING ERROR AND THE RESPONSIVITY PRINCIPLE IN A COGNITIVE-BEHAVIORAL INTERVENTION FOR OFFENDERS: IMPLICATIONS FOR CRIMINAL JUSTICE POLICY

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ABSTRACT

The intent of criminal justice policy is to guide offender rehabilitation efforts to include the most effective and efficient programming, while reducing recidivism and maintaining public safety. Research over the past several years indicates that the use of cognitive-behavioral approaches to offender rehabilitation tend to have the greatest efficacy in terms of lowering recidivism rates. The focus of many cognitive-behavioral programs for offenders is the identification of and reduction of thinking errors. While cognitive-behavioral programs have been found to be more effective, why some offenders appear to be more responsive to cognitive-behavioral programming is less understood. The issue of responsivity has garnered much interest in recent years. Utilizing a longitudinal design, race and gender differences in terms of thinking error were analyzed for 527 offenders prior to and following involvement in a cognitive-behavioral intervention. Differences in the degree of change from pre to post intervention were also analyzed. Further, thinking error and the responsivity variables of race and gender were analyzed to assess their ability to predict unsuccessful completion in a community-based correctional facility for 926 offenders. Results indicate that important race and gender differences exist prior to and following participation in a cognitive-behavioral intervention. The responsivity to cognitive-behavioral interventions may be influenced by gender and race. As such, cognitive-behavioral programs may need to be revised to account for these differences and provide more effective intervention, thus
further reducing recidivism rates. Results are discussed in terms of their importance to correctional rehabilitation efforts and criminal justice policy.
DEDICATION

Twenty-one years ago a started out on a journey with virtually no foresight and little preparation. I was the first in my family to pursue a college degree and I did not fully understand what that meant or what would be involved. Nine years later I completed my Master’s degree and began pursuing a doctorate only to give up after two years of rejection. Now, 21 years after starting that journey, I stand on the verge of achieving a doctorate. Though the journey I took was not along the route I had mapped out, nor was it the most direct, I have grown considerably because of it.

I dedicate this to my amazing and beautiful wife, Paula, who has been beside me for nearly the entire journey. She has supported me financially and emotionally throughout. She has always supported my goals and she has been a constant source of encouragement despite the personal sacrifices she has had to make in order for me to achieve them. Over time I have taken her for granted and I have lost sight of the sacrifices she has made. I was so focused on my goals that I failed to see her standing beside me. I thank her for all she has done for me along the way.

I also dedicate this to my children, Kaylie and Aiden. Both have been a wonderful distraction throughout the writing process. I hope that my educational achievement will be a positive example to both of them, and something they will never forget.
ACKNOWLEDGEMENTS

There are many individuals who have supported me in this endeavor. Some have played a large part, while others have played a lesser part. Nonetheless, each has been important to me throughout. I wish to acknowledge my friends and family for their kind words of encouragement. My parents and in-laws, while not fully understanding every detail that encompasses the completion of a doctoral degree, have enthusiastically believed in me every step of the way.

Sincere thanks goes to my dissertation committee. Their diverse backgrounds and experience provided me feedback and guidance that not only resulted in a solid dissertation, but will forever guide me in the future. My dissertation advisor, Dr. Peggy Stephens, was and continues to be a constant source of wisdom and support, and she was extremely accommodating throughout the process. Because of her I was able to complete the process relatively quickly and with few problems, and I thank her for that. I also thank Dr. Sonia Alemagno. Her encouragement five years ago made be believe in a goal that I had since given up on. She continues to support and encourage me and for that I am truly thankful. I was privileged enough to have benefitted from Dr. RaJade Berry-James’ wisdom in the classroom as well as in the preparation of my dissertation. Her feedback has been an important guide during the final stages of my writing. Dr. Gregory Plagens provided invaluable feedback that not only made me think more broadly about how policy fit into my writing, but has helped me to look through a policy lens in other
aspects of my career. Finally, I am indebted to Dr. Valerie Callanan for her feedback and support. Her sociological perspective has been a valuable addition. I thank each member for taking the time to serve on my committee. I could not have asked for a better committee.

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CHAPTER I

INTRODUCTION

A goal of criminal justice policy is to guide offender rehabilitation programming in an effort to support interventions with offenders that ultimately reduce rates of recidivism. Findings have overwhelmingly indicated that cognitive-behavioral interventions are among the most efficacious interventions in use with offenders. However, evaluating the effectiveness of cognitive-behavioral interventions typically involves the collection of recidivism on offenders post-release from the cognitive-behavioral program. Criminal justice policies requiring the use of recidivism as an outcome variable puts substantial strain on already limited financial and staff resources. Requiring community agencies to conduct evaluations of their programming using recidivism data is a significant burden, and alternative means of evaluating cognitive-behavioral programming that are less burdensome should be examined.

Partly due to inadequate research, to-date criminal justice policies have largely ignored individual offender characteristics that have the potential to influence the effectiveness of such cognitive-behavioral interventions. As a result, cognitive-behavioral interventions are implemented without the consideration that gender, race or other variables might hinder the effectiveness of a cognitive-behavioral intervention for some groups of offenders.
To continue moving forward with informed criminal justice policies, more work is needed to assess the feasibility of using potentially more efficient outcome variables rather than recidivism to measure effectiveness, and to discern individual offender variables that facilitate (or hinder) the offender rehabilitation efforts of cognitive-behavioral interventions.

**Background**

Given the increasing rates of poverty, drug use and unemployment, more individuals are finding themselves criminally-involved. While punishments such as prison or jail time tend to be the easiest and quickest way to punish criminal behavior, most U.S. prison and jail systems are filled to capacity. Since 1973 the number of individuals under the supervision of the U.S. criminal justice system has increased nearly 200 percent (Clear, 1994). According to the Bureau of Justice Statistics (1998), more than 1.8 million Americans are incarcerated. Further, many State and Federal prisons are operating at or above capacity (Harrison & Beck, 2006). The male prison population has shown nearly 2 percent increases each year since 2003 (Harrison & Beck, 2004; Harrison & Beck, 2005; Harrison & Beck, 2006), and since the 1980s the female prison population has increased at two times the rate of the male prison population (Danner, 1998; Immarigeon & Chesney-Lind, 1992). Incarceration as a sentencing option has been shown to be relatively expensive and largely ineffective in reducing future criminal behavior when compared to community corrections (e.g., Barajas Jr, 1993; Buddress, 1997; Lawrence, 1991; Petersilia, Turner, Kahan, & Peterson, 1985). Consequently, it is
costly to incarcerate offenders and does little to reduce an offender’s likelihood of recidivating. In an effort to reduce costs and strain on prison and jail systems, many offenders are being diverted to community corrections programs where there is a greater focus on rehabilitation.

Despite increases in incarceration, studies suggest that the public supports policies designed to use the criminal justice system to rehabilitate offenders (e.g., Applegate, Cullen, & Fisher, 1997; Cullen, Fisher, & Applegate, 2000; Moon, Sundt, Cullen, & Wright, 2000; Nagin, Piquero, Scott, & Steinberg, 2006; Roberts, 2004; Roberts & Stalans, 1997). In fact, criminal justice policy in support of offender rehabilitation has been shown to be more effective than policy in support of correctional sanctions (Andrews et al., 1990; Gendreau, Goggin, Cullen, & Andrews, 2000). Research over the past several decades supports the notion that offender rehabilitation programs are effective in reducing future criminal behavior (Andrews et al., 1990; Antonowicz & Ross, 1994; Basta & Davidson, 1988; Cullen, 2005; Garrett, 1985; Gendreau & Ross, 1979; Gendreau & Ross, 1987; Gensheimer, Mayer, Gottschalk, & Davidson, 1986; Kirby, 1954; Lipsey, 1992; Lipsey, 1999; Losel, 1999; Palmer, 1975; Sherman et al., 1998; Van Voorhis et al., 2002).

Although research has shown offender rehabilitation programs to be effective, not all approaches to rehabilitation are effective (Andrews et al., 1990; Gendreau, Goggin, Cullen, & Andrews, 2000; Lipsey, 1999; Sherman et al., 1998). Moreover, some approaches to offender rehabilitation are largely ineffective or can increase recidivism rates (Andrews et al., 1990; Aos, Miller, & Drake, 2006; Gendreau & Ross, 1979; Gendreau & Ross, 1987; Lipsey, 1999; Sherman et al., 1998). Since about the 1980s
there has been a concerted effort by researchers in the criminal justice field to discern the
variables important in maximizing the efficacy of offender rehabilitation programs. To
date, that effort has resulted in the Principles of Effective Intervention for offenders
Gendreau, 1996). The principles of effective intervention are a set of principles that when
used increase the effectiveness of offender rehabilitation programming. Programs that
utilize the principles have been shown to reduce recidivism rates by as much as 40
percent (Cullen & Gendreau, 2000).

Statement of the Problem

Three of the Principles of Effective Intervention, risk, need and responsivity
(Andrews et al., 1990), have proven to be the most important and most utilized of the
principles. The risk and need principles stress the importance of identifying the risks and
needs of offenders that increase the likelihood of criminal behavior and working to
address those risks and needs in an effort to reduce the likelihood of future criminal
behavior. The responsivity principle specifies that treatment must be carefully matched to
the learning style of the offender. Two types of responsivity have been identified. In
terms of “general responsivity” it has been found that cognitive-behavioral interventions
are most effective in changing offender behavior and thus reducing recidivism (e.g.,
Gendreau & Andrews, 1990; Pearson & Lipton, 1999; Pearson, Lipton, Cleland, & Yee,
2002). The other aspect of the responsivity principle, “specific responsivity,” states that
each offender has individual and unique characteristics that affect his or her ability to
learn (Gendreau, 1996; Kennedy, 2000). As such, those characteristics must be attended
to in an effort to match the offender’s learning style and more effectively teach the offender prosocial skills. Examples of variables that researchers have suggested as potentially important to specific responsivity include, motivation to change (see Prochaska, DiClemente, & Norcross, 1992), maturity, anxiety (see Ross & Fabiano, 1985), personality (see Van Voorhis, 1994; Van Voorhis & Sperber, 1999; Warren, 1969), intelligence (see Ross & Fabiano, 1985), self-esteem, ethnicity and gender. However, as Andrews and Bonta (2007) suggest, few of the variables considered under the specific responsibility principle have been studied.

**Race and gender.** Some research suggests that offender rehabilitation programs are less effective for minorities (Garrett, 1985; Leiber & Mawhoor, 1995; Lochman, Coie, Underwood, & Terry, 1993; Nangle, Erdley, Carpenter, & Newman, 2002; Taft, Murphy, Elliott, & Keaser, 2001). This has been found to be true for programs adhering to the principles of effective intervention as well (Robinson, 1995; Van Voorhis et al., 2002). A few studies have examined the effectiveness of offender rehabilitation programs designed specifically for minority offenders and have found evidence to suggest that these race-specific programs are more efficacious for minority offenders than non-race-specific interventions (Hudley & Graham, 1993; King, Holmes, Henderson, & Latessa, 2001). Research regarding female offenders has suggested that there are differences between males and females that need to be considered to better treat female offenders (see Belknap & Holsinger, 1998; Bloom, 1998; Koons, Burrow, Morash, & Bynum, 1997). However, as with race, extant research regarding specific responsivity as it relates to gender is lacking (Koons, Burrow, Morash, & Bynum, 1997).
Race and gender are larger social constructs for culture. That said, it is likely that cultural differences contribute to race and gender differences among offenders. For instance, inner-city communities, where criminal behavior is common and law enforcement is targeted, are predominately populated by African-American or other minority individuals. The communities from which Caucasian offenders reside may be in stark contrast to the communities of African-American offenders, thus the social environment will influence the two races differently. Likewise, societal influences differ for males and females. Females tend to be viewed as subordinate to males and tend to have fewer opportunities than males. Further, society tends to view overt displays of aggression as acceptable when exhibited by males but not when exhibited by females. Race and gender can be viewed as two distinct constructs that are strongly related to an offender’s culture. As a result, there is the potential for race and gender differences that must be considered with regard to specific responsivity.

**Thinking errors as a measure of program efficacy.** How gender and race affect thinking errors has not been studied. The primary purpose of cognitive-behavioral interventions such as Thinking for a Change (Bush, Glick, & Taymans, 1997a) is to teach offenders to recognize the problematic use of certain types of cognitions and to teach offenders how to replace such thinking errors with more prosocially acceptable cognitions. However, research to-date has neglected to study cognitive change or differences in thinking errors among different subgroups of offenders. Instead, recidivism as an indirect measure of program effectiveness continues to be the standard outcome measure. Identifying potential differences in thinking errors and/or cognitive change
among subgroups of offenders is an important next step in adding to the literature regarding the Principles of Effective Intervention.

**Purpose of the Study**

The purpose of this study is to examine the responsivity principle as it relates to potential differences in gender (male/female) and race (minority/non-minority) for offenders; specifically, I will look at how gender and race affect thinking errors and cognitive change. This study will address the following research questions:

1a. Do thinking errors differ by gender prior to participation in a cognitive-behavioral intervention?

1b. Do thinking errors differ by gender following participation in a cognitive-behavioral intervention?

1c. Do changes in thinking errors (cognitive change) differ by gender following participation in a cognitive-behavioral intervention (e.g., are there decreases or increases in certain types of thinking errors for males but not for females following intervention)?

2a. Do thinking errors differ by race prior to participation in a cognitive-behavioral intervention?

2b. Do thinking errors differ by race following participation in a cognitive-behavioral intervention?

2c. Do changes in thinking errors (cognitive change) differ by race following participation in a cognitive-behavioral intervention (e.g., are there decreases or
increases in certain types of thinking errors for African-American offenders but not for Caucasian offenders following intervention)?

3. Can certain thinking errors predict which offenders will fail to complete the CBCF program?

In order to answer the research questions, data will be collected from a sample of offenders sentenced to complete rehabilitation programming at a Community-based Correctional Facility (CBCF). A measure of thinking errors will be administered prior to and following participation in a cognitive-behavioral intervention. The study will make important contributions to the dearth of literature regarding specific responsivity by gender and race, and will help guide policy in the offender-rehabilitation field.
CHAPTER II

THEORETICAL AND EMPIRICAL FOUNDATION FOR THE STUDY

The following chapter serves several purposes. First, a historical review of the criminal justice policy in the United States will be presented. The review will detail the perspectives held in the United States with regard to the punishment and rehabilitation of offenders. Second, a discussion of recent efforts to reform criminal justice policy in the United States will be provided. The discussion will include the national effort of the Criminal Justice Reinvestment Act followed by Ohio-specific efforts to reform criminal justice policy. The section will conclude with examples of criminal justice policy reform in other states. Third, a brief discussion regarding fairness and efficiency of criminal justice policies is provided. It will be argued that to best utilize limited funding, rehabilitation programs must be evidence-based in an effort to maximize funding resources. To the issue of fairness, it is argued that programs funded under criminal justice policies are primarily financed by taxpayer contributions, but are predominately created for offenders who are from lower socioeconomic backgrounds and thus contribute relatively little to the funding of criminal justice policies. Fourth, an overview of the more prominent theories of delinquent behavior will be provided. It will be argued that most theories of delinquent behavior tend to be too specific and thus cannot adequately explain delinquent behavior as it applies to diverse human behavior. Further,
the Psychology of Criminal Conduct (PCC; Andrews & Bonta, 2007) provides a theory to bridge this gap which recognizes the range of variables that account for delinquent behavior. Fifth, the Principles of Effective Intervention (Andrews & Bonta, 2007) will be presented as one of the most prominent frameworks currently guiding the offender rehabilitation effort. A detailed examination of the Risk-Need-Responsivity (RNR; Andrews & Bonta, 2007) model drawn from the Principles of Effective Intervention will be included. Sixth, the importance of focusing on cognitive-behavioral approaches in the effort to rehabilitate offenders will be presented. A discussion of the relevance of examining variables that measure cognitive change and the application of such variables in identifying subgroup differences will also be included. The section will also present the social information-processing model by Crick and Dodge (1994) to explain how thinking error is related to criminal behavior. Seventh, it will be argued that thinking error may be a more efficient means of evaluating the effectiveness of cognitive-behavioral programming, and the issues that make recidivism as an outcome variable less reliable are presented. Eighth, thinking error as a specific responsivity issue is presented. This section includes discussion of gender and racial subgroup differences. Finally, the chapter concludes with a presentation of many of the issues that must be considered when evaluating the effectiveness of offender rehabilitation programs.

The History of Rehabilitation Policy in the United States

In this section I present the changing focus of criminal justice policy since the early 1800’s. This will include a discussion of the impetus for change from the rehabilitative ideal that occurred in the early 1970’s. The section will conclude with a
discussion of the current state of the criminal justice system and the focus of rehabilitative policy.

The beginning of the rehabilitative ideal. The idea that those who break the law should not only be punished, but also rehabilitated has dominated the criminal justice system in the United States (McKelvey, 1993; Rothman, 1971; Rotman, 1995). However, during the last 25 years of the 20th century it has become apparent that the idea of rehabilitation has often been far from the ideal. Logan and Gaes (1993) argue that rehabilitation in America is typically viewed as a failure that should be altogether dropped from the criminal justice system or implemented only as a secondary tactic.

Many transformations have taken place since the early 1800’s with regard to offender rehabilitation policy in the United States. The first such transformation began with the creation of the penitentiary where criminals were housed so that they could be changed into prosocial individuals (Rothman, 1971; de Beaumont & de Tocqueville, 1979). Cullen & Gendreau (2000) describe three views that scholars profess as the impetus for creation of the penitentiary. First, there was the view that current forms of “rehabilitation”—gallows, pillory and whipping post, to name a few—were inhumane and thus the penitentiary came into existence as a humane form of rehabilitation. Second, there was a changing social context that supported the view that crime could be reduced by taking delinquents out a criminogenic environment and confining them to a penitentiary that is orderly and morally pure. Third, some viewed the penitentiary as part of a conspiracy in which the economic and political elite could discipline the poor and change them into productive workers (see Colvin, 2000; Foucault, 1995; Garland, 1993; Ignatieff, 1981; McKelvey, 1993; Rothman, 1971). Whatever the catalyst, penitentiaries
became a part of the modern criminal justice system and continue to be a dominate representation of the same.

Two competing models exemplified the penitentiaries in the United States. Although both models sought to reform offenders, the Auburn model and the Pennsylvania model differed in that the former allowed inmates to congregate with each other while participating in religious readings and labor (Cullen & Gendreau, 2000). The Pennsylvania model included a similar agenda. However, inmates were not permitted to associate with each other (Cullen & Gendreau, 2000).

The two penitentiary models remained for most of the 1800’s. Cullen and Gendreau (2000) report that near the end of the 1800’s religion and labor remained as the typical approach to rehabilitating offenders and that education had been added in some instances. However, this approach to rehabilitate offenders had become less appealing over the years. As a consequence, the first meeting of the National Congress on Penitentiary and Reformatory Discipline convened in 1870 (Wines, 1871). As Cullen and Gendreau (2000) explain, the intent of this meeting was to create a “new penology.” It was decided that the new policy with regard to offender rehabilitation should be one in which the inmate was “put into circumstances where he will be able, through his own exertions, to continually better his own condition. A regulated self-interest must be brought into play, and made constantly operative” (Wines, 1871, p. 541). Further, the National Congress on Penitentiary and Reformatory Discipline stated that an incentive system should also foster hope, stress rewards rather than discipline and allow offenders to be promoted to higher status within the penitentiary, thereby earning greater freedoms and amenities (Cullen & Gendreau, 2000). Perhaps the most notable change in policy as a
result of the meeting was the proposal and support of the indeterminate sentence (Cullen & Gendreau, 2000; Cullen & Gilbert, 1982; Rothman, 2002). The indeterminate sentence provided the criminal justice system with a tool by which the release date of an inmate was no longer predetermined. Instead, an inmate who showed progress in terms of being rehabilitated could be rewarded with a shortened release date. Prior to the indeterminate sentence, inmates had no incentive to reform because regardless of their progress, the release date had been predetermined at sentencing.

A positivistic approach to offender rehabilitation. Until the latter part of the 19th century, the rehabilitation efforts (e.g., religion, education, labor) were unscientifically based. Cultural views of crime and delinquency, which guided offender rehabilitation efforts, dictated that perpetrators of such offenses were morally corrupt (Cullen & Gendreau, 2000). As such, exposure to religion, education and labor were thought to be the answer in rehabilitating an offender.

During the second half of the 1800’s the social sciences were presenting a less religious and more scientific understanding of human behavior (Cullen & Gendreau, 2000). According to (Rothman, 2002) the criminal justice system was openly accepting of this new information as it offered a more comprehensive understanding of criminal behavior and the types of intervention that might be developed to more effectively rehabilitate an offender. A more scientific approach to rehabilitation along with the new policy reforms mandated by the National Congress on Penitentiary and Reformatory Discipline resulted in a dominate correctional paradigm, the “rehabilitative ideal,” spanning into the 20th century (Allen, 1964).
Cullen and Gendreau (2000) write that the new rehabilitative ideal policy was comprised of several interrelated components. One component was the belief that crime results from an array of psychological and sociological variables unique to each offender. Further, these variables interact to move an individual to procriminal behavior. Another component was the belief that if one is to prevent further criminal behavior the individual variables responsible for initiating the procriminal behavior needed to be targeted and changed. Another belief comprising the rehabilitative ideal policy was that the goal of the correctional system should be to rehabilitate. A fourth component was to customize the rehabilitative effort to each offender, because the variables leading to criminal behavior were unique to each offender, and to accommodate the varying needs of offenders, the agents of the correctional system should be mostly unrestricted with regard to the discretion used in the rehabilitative effort. Despite all the changes that occurred, (Rothman, 2002) reported that the policy lacked the resources and knowledge needed to be effective.

In 1954, to reflect the notion that offender rehabilitation was the ideal, the American Prison Association changed its name to the American Correctional Association (Cullen & Gendreau, 2000). Further, the term “prison” was replaced with “correctional institution.” According to Cullen and Gendreau (2000), the next 20 years in correctional rehabilitation efforts saw the introduction of numerous and diverse treatment programs designed to rehabilitate offenders. These programs included vocational and college education, group and individual counseling, work-release and behavioral modification. Also during this time, the concept of “community treatment” and “reintegration” of offenders back into the community became a focus of policy (Cullen & Gendreau, 2000).
Despite the energy and optimism surrounding the field during these two decades, as Cressey (1958) and Gibbons (1999) note, those involved were conscientious of the issues associated with properly implementing rehabilitative programs. Foremost, program fidelity was an issue because many programs lacked available resources and adequately trained staff.

Nothing works. In 1974, the offender rehabilitation effort was dealt a substantial blow when Martinson’s (1974) essay, “What Works? Questions and Answers about Prison Reform” was published. The essay reported on the results of 231 evaluation studies of offender rehabilitation programs. In his analysis, Martinson (1974) included studies that evaluated the effectiveness of various offender rehabilitation programs (see also Lipton, Martinson, & Wilks, 1975). Each of the studies in Martinson’s analysis was conducted between 1945 and 1967 and included a comparison group (Cullen & Gendreau, 2000). Martinson concluded, “Do all of these studies lead irrevocably to the conclusion that nothing works, that we haven’t the faintest clue about how to rehabilitate offenders and reduce recidivism?” (1974, p. 48). As Cullen and Gendreau (2000) explain, Martinson’s skepticism was not the first such criticism of the effectiveness of offender rehabilitation programming (see Bailey, 1966; Berleman & Steinburn, 1969; Cressey, 1958; Gold, 1974; Kirby, 1954; Robison & Smith, 1971; Wootton, 1959, for example). However, Martinson’s assertion that nothing works with regard to offender rehabilitation programming was readily accepted and quickly promulgated.

Cullen & Gendreau (2000) argue that the typical academic response to Martinson’s claim would have been to call for additional research to better support or refute the nothing works claim. Unfortunately, the social landscape in the United States
with regard to crime was highly supportive of the notion that offender rehabilitation was not effective and current policy was failing. Cullen & Gilbert (1982) write that all the evidence indicated that the crime rate in recent years had increased dramatically.

Radzinowicz and King (1977) note that criminologists were frequently writing about upsurges in crime, and Silberman reported that “since the early 1960’s the United States had been in the grip of a crime wave of epic proportions” (1978, p. 3). Data from the Federal Bureau of Investigation (FBI; as cited in Cullen & Gilbert, 1982) indicated that during the previous decade serious violent crime and serious property crime had risen more than 80% and 75%, respectively. Social injustices such as growing economic disparity and general disapproval of government policy (e.g., Vietnam, Watergate scandal) also helped to fuel the decline of the rehabilitative ideal. Lipset (1987) and Patterson (1996) report that confidence in the United States government was waning.

The lack of confidence in the government carried over into the correctional system when in 1971 29 inmates and 10 guards were killed in an attempt to quell a riot at Attica Prison (Useem & Kimball, 1991). Cullen & Gendreau (2000) write, “An intense spotlight was placed on the actions of the state’s representatives, especially judges and correctional officials. A defining question emerged: Could these people be trusted to exercise their discretion—the discretion legitimated by the rehabilitative ideal—in a prudent and benevolent way?” (p. 122). The combination of Martinson’s (1974) publication and the social and political climate at the time resulted in the decline of the rehabilitative ideal.

From nothing works to what works. Despite a decline in the rehabilitative ideal that culminated with Martinson’s (1974) essay, the years that followed began a slow but
positivistic movement to discern the effectiveness of offender rehabilitation programs. Beneath the eagerly accepted, “nothing works,” proclamation researchers were attempting to tease out the individual components or characteristics of rehabilitation programming and the interplay those components and characteristics had with regard to criminal behavior. Cullen & Gendreau (2000) write that although “nothing works” was the theme that most took from Martinson’s study, Martinson himself argued that no category of offender rehabilitation programming was consistently showing reductions in recidivism.

Numerous reviews of the offender rehabilitation research followed Martinson’s (1974) work. Using 82 studies from the Lipton, Martinson and Wilks study (1975), Palmer (1975) determined that 48% reduced recidivism to some degree. Gendreau & Ross (1979) found that in 95 studies of offender rehabilitation 86% showed significant reductions in delinquent behavior. Lipsey (1995), using the sophisticated quantitative technique of meta-analysis, presented a review of more than 400 studies of offender rehabilitation and found that 64% had appreciable positive effects on criminality. According to Andrews & Bonta (2007) by 1990, there were nearly 500 studies published on controlled evaluations of community correctional interventions. On average, offender rehabilitation programs were at least moderately effective in reducing recidivism.

The large meta-analytic study by Lipsey (1995) concluded that the major variables associated with reduced recidivism were: 1) longer treatment period and meaningful contact with the offender; 2) rehabilitation programs provided outside of the correctional facility (e.g., community corrections); 3) programs that were behavioral, skill-oriented and multimodal; 4) programming for high-risk offenders (vs. low-risk); 5)
programming that addresses extrapersonal issues (e.g., family); and 6) programs delivered under the supervision of an evaluator. Lipsey’s (1995) study highlights what would become, and to-date remains, a major focus of offender rehabilitation research and guide for criminal justice policy.

**The United States Criminal Justice System**

In 1980, over 15,000 offenders were sent to prison or jail in the United States putting the total number of incarcerated offenders at 329,122 (Bureau of Justice Statistics United States, 1981). Incarceration rates have increased persistently since before 1970 in the United States (Bureau of Justice Statistics United States, 1981). Policy changes during this time contributed to the increase in incarcerated offenders, including mandatory sentencing, determinate sentences and speedy trial acts (Bureau of Justice Statistics United States, 1981). By 1990, the incarcerated population in the United States had grown to a record 771,243 offenders—a 134% increase from 1980 (Cohen, 1991). According to Cohen (1991), because of overcrowding in prison facilities, over 18,000 offenders were being held in local jails while waiting for a bed in a prison facility.

By 2000, the increasing prison population in the United States began to slow. The prison population grew 1.3%, lower than the 6.0% average rate of growth since 1990 (Beck & Harrison, 2001). The prison population grew at its slowest rate (1.3%) since 1972 and had the lowest absolute increase since 1980 (Beck & Harrison, 2001). Incarcerated offenders totaled 2,071,686 at the end of 2000 (Beck & Harrison, 2001).

Nationally, the male prison population in the United States has grown nearly 2% each year from 2003 to 2005, adding over 76,000 males to the U.S. prison system
(Harrison & Beck, 2004; Harrison & Beck, 2005; Harrison & Beck, 2006). During that same time the female prison population has grown at nearly twice the rate of the male prison population, resulting in 10,246 additional female prisoners (Harrison & Beck, 2004; Harrison & Beck, 2005; Harrison & Beck, 2006). According to Harrison and Beck (2006), more than half of all U.S. prisons were running at or above capacity—a considerable burden to an already strained system.

The most recent incarceration data indicate that by yearend 2008 there were 1,610,446 offenders incarcerated in state and federal prisons or jails, an increase of 10,539 offenders over yearend 2007 (Sabol, West, & Cooper, 2009). The rate of growth (0.8%) in 2008 was the slowest since 2000 (Sabol, West, & Cooper, 2009). According to Sabol, West and Cooper (2009), during 2008 there was an increase in prison releases, of which the majority were releases to the community without supervision.

According to a 1999 Bureau of Justice Statistics study, an estimated 16% of state and federal adult prisoners have a mental illness (Ditton, 1999). The American Psychiatric Association (APA) estimates that as many as 1 in 5 prisoners are seriously mentally ill (APA, 2000). Often co-occurring with mental illness, substance abuse or dependence affects over half of the prison population (Mumola & Karberg, 2006). Further, studies have shown that many prisoners have few job skills, low education and cognitive deficits (Petersilia, 2003; Walters, 1990). All of these factors increase an offender’s likelihood of recommitting crimes.

A need for alternatives to imprisonment has become apparent. Consequently, the rehabilitation of offenders focusing on drug and alcohol abuse, mental health issues and cognitive-behavioral interventions has become increasingly important. As such,
numerous offender rehabilitation programs have been developed and implemented as alternatives to imprisonment and to reduce the incidence of recidivism. These programs can include substance abuse treatment, mental health treatment, family violence and anger management counseling, employment training, cognitive-behavioral intervention and General Education Development (GED) courses (see Aos, Miller, & Drake, 2006 for examples). The purpose of an offender rehabilitation program is to identify and address the needs of offenders in an effort to increase the offender’s ability to engage in prosocial behaviors.

Efforts in the United States to Reform Criminal Justice Policy

As stated previously, much of the criminal justice policy in the United States has been focused on the rehabilitation of offenders. However, not all efforts to rehabilitate offenders have proven equally effective (c.f., Gendreau & Ross, 1979; Lipsey, 1995; Martinson, 1974). Since the 1980’s there has been a push for the use of evidence-based practices. As such, evidence-based policies have emerged. As Petersilia notes, “Evidence-based policy is an approach that helps people make will-informed decisions about policies and programs by putting the best available evidence from research at the heart of policy development and implementation” (2005, p.2). To this end, in 2006 the Public Safety Performance Project was initiated in an effort “to help states advance fiscally sound data-driven policies and practices in sentencing and corrections that protect public safety, hold offenders accountable and control corrections costs” (The Pew Center on the States, 2010).
The objectives of the Public Safety Performance Project are: 1) to assist states in collecting and analyzing data regarding prison admissions and the implications of various practices (e.g., length of stay, return to prison) for public safety and budgets; 2) to assist states in understanding how current criminal justice policies compare to the policies of other states; and 3) assist states in using reputable research to advance reforms to reduce crime and recidivism and best use taxpayer monies.

In 2008, the Pew Center on the States released, “Policy Framework to Strengthen Community Corrections” (2008). In drafting the “Policy Framework to Strengthen Community Corrections” document, The Pew Center on the States brought together leading policy makers, practitioners and researchers to review policy reforms in numerous states enacted to assist corrections agencies in the adoption of evidence-based practices (The Pew Center on the States, 2008). As a result, five policy-level actions were identified for state policy makers to consider for implementation in an informed effort to strengthen community-corrections efforts and control costs (The Pew Center on the States, 2008). The five actions included: 1) employing evidence-based practices (e.g., funding programs and practices that research has shown to be effective); 2) utilizing earned compliance credits (e.g., allowing offenders to earn “credits” for compliance that reduce supervision time); 3) using administrative sanctions (e.g., establishing swift, certain and graduated sanctions and rewards in response to infractions and compliance); 4) implementing performance incentive funding (e.g., providing funding to community corrections agencies based on performance—reducing recidivism); and 5) employing performance measurement (e.g., require community corrections agencies to collect and report on measures deemed relevant to measuring program performance). The “Policy
Framework to Strengthen Community Corrections” document not only contains recommendations for policy makers, but includes suggested language for each recommendation for drafting policy. Further, each policy recommendation provides descriptive examples of states implementing similar recommendations.

The Public Safety Performance Project provides expert assistance to states in an effort to suggest reforms in criminal justice policy designed to increase the efficacy of sentencing and programming, while maximizing limited resources. This assistance includes, “a data-driven analysis of their sentencing and corrections systems, plus a policy audit to identify a range of options, drawing on promising approaches and practices in other states facing similar challenges” (The Pew Center on the States, 2010). More than a dozen states have received assistance from the Public Safety Performance Project, including Ohio.

The Criminal Justice Reinvestment Act. In 2009, Senators Sheldon Whitehouse (D-RI), John Cornyn (R-TX) and Patrick Leahy (D-VT) introduced the Criminal Justice Reinvestment Act (Whitehouse, 2010). The bill (H.R.4080, S.2772) was drafted to assist states to better understand and manage the growing population of incarcerated offenders and increase public safety (Whitehouse, 2010). Specifically, the bill would authorize grants to study criminal justice programs and trends in an effort to design and implement criminal justice policies to more efficiently manage spending (Whitehouse, 2010). The grant program would be comprised of two parts—the first to analyze criminal justice data and develop policies and the second to evaluate the impact of policy reform (Whitehouse, 2010). The Criminal Justice Reinvestment Act of 2010 was approved March 11, 2010.
Criminal Justice Policy Reform in Ohio. Like most states, Ohio has seen increases in its prison population over the last several years. However, the commitments to prison have decreased slightly in recent years as community-correction options have become more available and more readily utilized. In fiscal year 2005, Ohio’s prison population consisted of 44,270 offenders of which 93 percent were male (Ohio Department of Rehabilitation and Correction, 2005). During that fiscal year there were 24,985 commitments (Ohio Department of Rehabilitation and Correction, 2005). Three years later in 2008, the total prison population in Ohio had increased to 50,371 offenders (Ohio Department of Rehabilitation and Correction, 2008). Commitments for fiscal year 2008 totaled 27,315 offenders. In fiscal year 2009, the total prison population remained stable, but commitments decreased slightly to 26,165 offenders (Ohio Department of Rehabilitation and Correction, 2009). The decrease in commitments can be partially attributed to the increasing availability and use of community-correction options for offenders. In fiscal years 2008 and 2009, 1,895 and 1,457 offenders, respectively, were placed in residential community-correction facilities (Ohio Department of Rehabilitation and Correction, 2008; Ohio Department of Rehabilitation and Correction, 2009).

Since about 2001 Ohio has taken a proactive stance in improving the criminal justice system through evidence-based policy reform. In Ohio the Bureau of Community Sanctions was created through an executive order in 1976 and later updated in 1992 (Ohio Department of Rehabilitation and Correction, 2010). The Bureau of Community Sanctions operates under the Ohio Department of Rehabilitation and Correction (ODRC).
and is charged with developing and enhancing community-correction programs for treating and sanctioning adult offenders in Ohio (Ohio Department of Rehabilitation and Correction, 2010). The ODRC commissioned an evaluation of Ohio’s residential community-correction programs in 2001 (Andrews & Janes, 2006). The evaluation (see Lowenkamp & Latessa, 2002) was a data-informed initiative to provide state policy makers with information to reform and improve community-correction programs in Ohio (Andrews & Janes, 2006). As a result of the evaluation recommendations were made to improve the effectiveness of the programs, and the ODRC put into place a funding process by which successful programs (e.g., those meeting performance objectives) would be rewarded, while poorly performing programs would be eliminated (Andrews & Janes, 2006).

State leaders in 2008 made a request to the Counsel for State Governments, PEW Center on the States and the U.S. Department of Justice Bureau of Justice Assistance for help in evaluating and drafting statewide policy framework for the criminal justice system in Ohio (2010). Prior to the assistance to Ohio, nine other states received assistance from the Justice Center providing policy makers in those states with analyses and policy reform recommendations that have saved those states millions of dollars (2010). Ohio legislators and criminal justice administrators are waiting to receive the findings and policy reform recommendations of the Justice Center. However, a second evaluation of community-correction programs was commissioned to follow-up with the results of the first evaluation. Results of the second evaluation were released in early 2010 and the ODRC has met with poorly-performing programs in an effort to correct program deficits and improve offender programming.
In New Hampshire an effort was initiated by law makers to achieve three goals—reduce corrections spending, reinvest in sanction and treatment programs, and increase public safety through reduced recidivism (Council of State Governments Justice Center, 2010). An analysis of the state’s criminal justice policy and practices revealed that between 1999 and 2009, New Hampshire incurred a 31% increase in its prison population and a nearly 200% increase in its corrections spending (Council of State Governments Justice Center, 2010). Further, almost 33% of offenders sentenced to prison were convicted of non-violent, property or drug offenses—meaning that these offenders, who are appropriate for community corrections programs did not participate in such programs (Council of State Governments Justice Center, 2010). Between 2000 and 2009, offenders sentenced to either probation or parole supervision increased 26% and 93%, respectively, while the number of probation officers available to supervise these offenders did not increase (Council of State Governments Justice Center, 2010). In contrast to most other states, New Hampshire does not appropriate state funds for electronic monitoring, rapid drug-testing, substance abuse treatment, intermediate sanctions or other evidence-based treatment programs for offenders on parole or probation (Council of State Governments Justice Center, 2010). After assessing the criminal justice policies in place in New Hampshire, the Justice Center (2010) made six policy reform recommendations: 1) focus community-based supervision efforts on high-risk offenders—because there are too few parole and probation officers to adequately supervise all offenders, supervision should be focused to offenders more likely to reoffend (e.g., high-risk offenders); 2) provide short, swift sanctions that are certain—this would allow probation and parole officers to respond to
offender violations without court hearings; 3) create an intermediate sanction program and facilities offering evidence-based programming—offenders who violate parole would be sanctioned to a halfway house or more secure housing facility thereby avoiding readmission to prison and providing evidence-based programming to the offender; 4) monitor offenders that have mental health and/or substance abuse disorders by providing rapid drug tests and access to treatment programs; 5) require that offenders returning from prison are placed in community-based supervision for at least nine months prior to the end of their sentence; and 6) reinforce truth-in-sentencing by ensuring offenders serve 100%-120% of their sentence—In 2009, New Hampshire had about 22% of its prison population incarcerated with 100% of their minimum sentence completed (Council of State Governments Justice Center, 2010). Further, it was noted that many of these offenders were being held while they completed mandated programming within the prison rather than being released into a community-based program that is less costly, but more effective than a prison-based program. Because the analysis of New Hampshire’s criminal justice policies by the Justice Center was only recently completed in January 2010, the impact of the recommended policy changes has yet to be realized.

A Justice Center analysis of criminal justice policy was completed in Texas in 2007 (Council of State Governments Justice Center, 2007). Prior to the analysis, Texas had the second-highest incarceration rate in the United States (Sabol, Minton, & Harrison, 2007). According to the Justice Center report, from 1985 to 2005 Texas’ prison population increased 300%, and between 1983 and 1997 the state spent $2.3 billion to build additional prison facilities adding 108,000 beds (Council of State Governments Justice Center, 2007). Despite the efforts of the criminal justice system in Texas, by 2007
the prisons were exceeding capacity once again (Council of State Governments Justice Center, 2007). Upon completion of the analysis conducted by the Justice Center, it was found that three primary factors were to blame for the increase in the prison population in Texas: 1) probation revocations had increased 18% while the number of offenders on probation had decreased 3%; 2) funding for community-based programs (e.g., drug and mental health treatment) had been cut; and 3) approvals for parole were decreasing—even for low-risk, non-violent offenders (Council of State Governments Justice Center, 2009). In general terms the Justice Center suggested reforms in criminal justice policy to expand services for offenders to include rehabilitative services in both community-based and state supervision facilities. Specifically, the Justice Center (Council of State Governments Justice Center, 2007) recommended policy reform to expand services for offenders in six areas: 1) Intermediate Sanction Facilities (ISFs) for parole and probation clients—the facilities would be used as a sanction for offenders who violate the conditions of their supervision rather than being sent to prison; 2) residential treatment for probation clients—the facilities would provide chemical-dependency treatment, counseling and other rehabilitative services to probation clients; 3) In-Prison Therapeutic Community (IPTC)—to provide intensive chemical-dependency treatment services while in prison or during post-release; 4) Substance Abuse Felony Punishment (SAFP)—to provide intensive chemical-dependency treatment services to probation clients who have violated the conditions of their probation because of drug or alcohol problems; 5) DWI prison treatment—to increase rates of parole by sentencing offenders with DWI to an in-prison treatment program; and 6) parole halfway houses—to provide residential services
to offenders approved for parole or mandatory release while they develop an appropriate plan for securing residency.

As of April 2009, the recommended policy reforms have been enacted, although not all have been fully realized (e.g., the IPTC and DWI prison are operational, while the SAFP program is 47% operational; Council of State Governments Justice Center, 2009). The policy reforms cost $282 million less than the cost to construct new or expand existing prisons (prior to the Justice Center (2009) analysis, Texas legislature had planned on spending $523 million to build or expand prisons). Despite earlier projections of an additional 5,141 offenders placed in Texas prisons between 2007 and 2008, only 529 additional offenders were incarcerated as a result of the policy reforms (Council of State Governments Justice Center, 2009). By 2008 revocations to prison decreased 4% and 25% for probation clients and parolees, respectively, due in part to increased availability of chemical-dependency treatment services and intermediate sanctions facilities (Council of State Governments Justice Center, 2009). While improvements have been made, issues remain. For instance, some facilities for residential chemical-dependency services and intermediate sanctions facilities have been delayed because some residents are resistant to having non-secure facilities in their communities (Council of State Governments Justice Center, 2009). Further, shortfalls in state revenue for the 2010-2011 budget have raised concern that some recommended policy reforms will need to be scaled back causing increases in incarcerated offenders (Council of State Governments Justice Center, 2009).
Fairness of Criminal Justice Policy

Reforming criminal justice policy has become a significant concern for many states in recent years due to the growing population of offenders and the rising costs to supervise offenders. Further, state budgets have been subjected to numerous and substantial cuts. As a result, states have been forced to find ways to supervise the growing offender population while operating under shrinking criminal justice operating budgets.

In creating criminal justice policies there is often a tradeoff between ensuring public safety and cost to society. For instance, incarcerating all offenders would increase public safety, but would be prohibitively costly. On the other hand, reduced funding would mean that fewer offenders could be incarcerated—likely resulting in reduced public safety. Consequently, recent policies (backed by research) have incorporated community-based programs for lower-risk, typically non-violent offenders—reserving prisons for society’s violent and repeat offenders. Over the last several years this has been the most “fair” and “efficient” approach to handling the growing population of offenders.

Gibbard (1984) describes the complexity of knowing the effects of health policy stating, “It is, of course, difficult and often impossible to establish reliably what the effects of a proposed policy will be, but even when we can, it remains to be said which features of the policy and its effects are desirable, which are undesirable, and how the desirable and undesirable aspects balance from an ethical point of view” (p. 261). The same holds true for criminal justice policy. A further complication is the issue of fairness. Programs funded through criminal justice policies are typically created to rehabilitate
and/or supervise offenders—the vast majority of whom are low-income and contribute little or nothing to taxpayer revenues that support criminal justice policies. Consequently, funding for criminal justice policies comes primarily from law-abiding, prosocial members of society, most of whom will not directly benefit (e.g., will not be arrested and participate in an offender rehabilitation program or prison) from the programs supported by the policies. That said, there is a challenge to create and implement criminal justice policies that are “fair” in that tax-paying members of society perceive that they are paying for programs that increase public safety. Weimer and Vining (1998) argue that policies that are viewed as fair are more likely to be accepted (see, for example, Nagin, 1990; Snavely, 1990).

In addition to fair criminal justice policies, there is a challenge to create and implement policies that are efficient. This is especially evident with the passing of the Government Performance Results Act of 1993 (1993). The purposes of the Government Performance Results Act (1993) were to: “1) improve the confidence of the American people in the capability of the Federal Government, by systematically holding Federal agencies accountable for achieving program results; 2) initiate program performance reform with a series of pilot projects in setting program goals, measuring program performance against those goals, and reporting publicly on their progress; 3) improve Federal program effectiveness and public accountability by promoting a new focus on results, service quality, and customer satisfaction; 4) help Federal managers improve service delivery, by requiring that they plan for meeting program objectives and by providing them with information about program results and service quality; 5) improve congressional decision-making by providing more objective information on achieving
statutory objectives, and on the relative effectiveness and efficiency of Federal programs and spending; and 6) improve internal management of the Federal Government.” With the Government Performance Results Act (1993) agencies were mandated to become results-oriented and develop ways to measure program performance.

As with many programs funded since the enactment of the Government Performance Results Act, criminal justice programs are increasingly scrutinized and programs are expected to be able prove their efficiency in meeting policy objectives. Weimer and Vining (1998) define efficiency as “the allocation of goods that maximizes the social welfare function (the ‘greatest good’ principle)” (p. 135). Given the limited resources available to fund criminal justice programs, it is vital to fund programs that have been proven through research to be most effective in rehabilitating offenders. Along with this is the need to fund studies to explore and test novel offender rehabilitation programs and to continue to discern the specifics of how to more effectively rehabilitate offenders and apply those findings to create more efficient criminal justice policies.

**Traditional Theoretical Views of Crime and Delinquency**

The following section will provide a general overview of the main theories introduced since the 1700s to explain criminal behavior. It is argued that many theories of criminal behavior are too narrow in scope to adequately explain complex human behavior as it relates to crime. Consequently, the Personal, Interpersonal and Community-Reinforcement (PIC-R; Andrews, 1982) theory was developed to better account for the human complexities that past theories had neglected. The section will conclude with a detailed summary of the Principles of Effective Intervention which has provided a
framework for developing and implementing evidence-based offender rehabilitation programming.

**Classical theory of crime.** Beginning as early as the late 1700’s, several theories to explain criminal behavior have been developed. Over time, some theories have waned while others have been revised to incorporate new research findings and better explain criminal behavior. The classical theory in criminology began in 1764 with the publication of “On Crimes and Punishment” (Beccaria, 1963). According to Beccaria, crime in society reflected irrational and ineffective law and not the presence of deviant human nature (Miller, Schreck, & Tewksbury, 2006). Later, Bentham (1789) published, “Introduction to the Principles of Morals and Legislation,” in which he argued that ultimately people seek pleasure and avoid pain. Simply put the classical model states that people intentionally do things because they expect to be rewarded in some way (Miller, Schreck, & Tewksbury, 2006). Consequently, an individual engages in a criminal act because he or she anticipates benefitting from the act.

**Biological theory of crime.** Biological theories of crime differed from classical theories in that biological theories emphasized the idea that deviant individuals had some biological or physical characteristic or condition that caused (or at least predisposed) them to commit crimes (Miller, Schreck, & Tewksbury, 2006). Biological theories of crime came to light in the late 1700s when Johan Caspar Lavater (Lavater & Siegrist, 1986) introduced Physiognomy and Franz Joseph Gall (1798) introduced Phrenology, in which there were specific facial (e.g., physiognomy) or brain (e.g., phrenology) characteristics that could distinguish criminals from non-criminals. Some biological theories of crime focus on genetics as a predetermining factor to criminal behavior.
(Miller, Schreck, & Tewksbury, 2006). Such theories argue that individuals born from parents who are criminals are predisposed to commit crimes because of inherited genes. Over time biological theories of crime have moved away from a strict view of biological causes of deviance to include outside influences such as social environment.

**Psychological theory of crime.** Psychological theories of crime focus primarily on the differences in which criminals think. Miller, Schreck and Tewksbury (2006) argue that psychological explanations of criminal behavior are among the most popular and such theories are reinforced in society through media reports (e.g., the criminal was “mentally unstable”). Psychological theories of crime include the psychoanalytic, personality, mental illness and mental deficiency views. The psychoanalytic view of criminal behavior posits that people commit crimes because the three parts of the personality—id, ego and superego (see Freud, 1923 “the ego and the id”)—are in conflict with each other as a result of some childhood trauma or neglect (e.g., Aichorn, 1935). Personality views of criminal behavior focus on the content and process of thinking patterns that result in crime (e.g., (Walters, 2002; White & Walters, 1989; Yochelson & Samenow, 1976). Views that focus on mental illness argue that some type of mental disorder in which the individual is inflicted with is at the root of the individual’s criminal behavior (e.g., Hodgins, Mednick, Brennan, Schulsinger, & Engberg, 1996; Modestin & Ammann, 1996; Tiihonen, Isohanni, Rasanen, Koiranen, & Moring, 1997), and theories of mental deficiency as a cause of criminal behavior tend to highlight the inferior intelligence of the criminal individual. As a result of inferior intelligence, criminals are unable to control issues in their lives and therefore their deviant behaviors (e.g., Goddard,

**Social ecological theory of crime.** Unlike psychological theories of crime, social ecological theories of crime focus on setting rather than the individual (Miller, Schreck, & Tewksbury, 2006). Social disorganization theory (Shaw & McKay, 1942) explains crime as a result of a disorganized community that is unable to work collectively and create an inhospitable environment for crime (e.g., Bursik & Grasmick, 1993; Sampson & Groves, 1989; Sampson & Wilson, 1990). The routine activities theory (Cohen & Felson, 1979) is an ecological theory that focuses on how certain situations can be conducive to criminal behavior. Specifically, there needs to be a motivated offender, a suitable target and ineffective protection (e.g., Fisher, Sloan, Cullen, & Lu, 1998; Mustaine & Tewksbury, 1998).

**Social learning theory of crime.** Social learning theories stress the importance of acquiring behaviors, including criminal behavior, through the observation of others (e.g., Burgess & Akers, 1960; Cohen, 1955; Sutherland, 1939). Once a behavior is learned, it is modeled in an attempt to meet a need. Social learning theories have developed over time to include elements of reinforcement and cultural transmission. As such, an individual can learn deviant behavior from peers living in the same subculture, and that deviant behavior can prompt peer approval thus reinforcing it.

**Strain theory of crime.** Strain theories of crime posit that individuals commit crimes because of external circumstances. Specifically, crime occurs when an individual is unable to achieve a goal or when confronted with intense stress. Robert Merton first introduced the theory in his paper, “Social Structure and Anomie” (Merton, 1938).
According to Merton, failure to achieve the “American Dream” (e.g., material and monetary success) resulted in strain. Further, individual’s respond to strain in one of five ways—conformity (e.g., continuing to strive for the American Dream), innovation (e.g., trying to achieve the American Dream but not through legally acceptable means), ritualism (e.g., no ambition, but still seek the American Dream), retreatism (e.g., give up on effort to achieve the American Dream and turn to alcohol/drugs), or rebellion (e.g., replace the American Dream with a different set of goals and means in which to achieve it). After decreasing in popularity in the 1970’s and 1980’s, strain theory regained popularity when broadened to consider other types of strain and coping (e.g., Agnew, 1992; Agnew, 1999; Messner & Rosenfeld, 1994).

**Control theory of crime.** Theories that explain how individuals resist engaging in criminal behavior are referred to as control theories. Hirschi (1969) first introduced control theory which assumed that there was a willingness for individuals to commit crime, but that certain “controls” reduce or eliminate the act of criminal behavior in most individuals. According to control theory, individuals are amoral and will engage in both good and bad behaviors in the ultimate goal of satisfying a rational self-interest. Hirschi (1969) believed that there was a social bond that imposed controls on behavior and it was this connectedness with society that prevented (or increased) the likelihood of criminal behavior. The theory has been expanded over the years to include various types of controls such as personal, social, direct, indirect and self-control (e.g., Gottredson & Hirschi, 1990; Nye, 1958; Reiss, 1951; Toby, 1957).

**Conflict theory of crime.** Conflict theories of crime propose that crime results because of social and economic forces operating within a society. Specifically, ruling-
class standards (e.g., criminal law, criminal justice system) are imposed upon lower-class individuals and in doing so the lower-class is unable to achieve the same goals as the ruling-class. Further, labels are placed on lower-class individuals (e.g., deviant, criminal) and those labels are internalized and become a part of the individual’s behavior (e.g., Becker, 1963; Lemert, 1951; Tannenbaum, 1938).

A New Theory to Explain Crime and Delinquency

Many theories have been proposed over the years to explain criminal behavior. However, many tend to be too narrow in scope to adequately explain diverse human behavior as it relates to criminality. In recent years a theory that incorporates components of several well-established theories has emerged. Andrews’ (1982) Personal, Interpersonal and Community-Reinforcement (PIC-R) theory is a broad cognitive social-learning theory that incorporates elements of motivational and control theories to explain factors that increase or decrease deviant behavior (Andrews & Bonta, 2007). The PIC-R theory was developed with the understanding that explanations of deviant behavior must include general knowledge from biological, human and social sciences, but must focus on behavioral and cognitive social-learning theories (Andrews & Bonta, 2007).

Fundamentally, the PIC-R theory borrows from behaviorism in that it explains how variations in human behavior can be found in an individual’s immediate environment. These factors present themselves in the form of rewards and costs that an individual anticipates as a consequence of a behavior (Andrews & Bonta, 2007). For example, anticipating that burglary (the behavior) will yield a television without being caught (the reward) increases the likelihood that the behavior will occur. Conversely,
anticipating that burglary will result in being arrested (the cost) will decrease the likelihood of the behavior occurring. Mediating variables also affect the likelihood of a behavior being initiated (or not being initiated). For instance, engaging in a deviant behavior may occur despite the individual anticipating that the likelihood of arrest is high because the individual’s peers approve of the behavior (e.g., interpersonal mediating variable). According to Andrews (1982), long-term behavior change can occur only if personal, interpersonal and community sources of rewards and costs are changed.

**The specifics of the PIC-R theory.** Andrews and Bonta (2007) detail the principles of the PIC-R theory. First, deviant and nondeviant behaviors are under the influence of antecedents and consequences. For example, an individual may decide to engage in a deviant behavior because his peers are encouraging him to do so (antecedent). Alternatively, the individual may decide not to engage in a deviant behavior because he believes the result (consequence) will be arrest and incarceration. A second principle of the PIC-R theory is that individual variations in the chance of a behavior (deviant or nondeviant) occurring are the result of variations in the signaled rewards and costs of the particular behavior. For instance, an individual who sells drugs on the same corner each day may decide to not sell on that particular corner one day if he perceives better selling potential (e.g., more buyers) at a different corner.

A third principle is that the properties of antecedents and consequences that control behavior are acquired through interactions between the environment and the individual. Fourth, antecedents and consequences can be additive or subtractive. Additive events include stimuli that are introduced, extended or increased, while subtractive events include stimuli that are withdrawn, shortened, or reduced. A fifth principle of the PIC-R
theory is that variations in the probability of a behavior occurring is a function of the intensity of the signaled rewards or costs for a particular behavior. Rewards are positively related to the occurrence of a behavior, while costs are negatively related to the occurrence of a behavior. For example, if an individual perceives (e.g., signaled) that by breaking into a home he will be greatly rewarded (e.g., steal a large sum of money), then the deviant behavior is more likely to occur. On the other hand, if the individual perceives that breaking into the home will be costly (e.g., nothing to steal or being shot by the resident), then the deviant behavior is less likely to occur.

Sixth, antecedents and consequences are of three primary sources that result from the actor, others or the behavior itself. Antecedents and consequences that result from the actor are mediated by self-management such as problem-solving or self-control skills and the direction of the influence on behavior depends on procriminal or prosocial cognitions. Antecedents and consequences that result from others are influenced by relationships with others. For example, if the other is respected or admired, the influence on behavior from that other is more likely to occur. Lastly, a behavior can be reinforced (or punished) as a result of repeated associations of a behavior and the antecedents or consequences of that behavior. For instance, an individual who repeatedly breaks into homes and leaves with large sums of money and does not get arrested (e.g., rewards) will likely continue to engage in that particular deviant behavior because it is rarely punished.

A seventh principle of the PIC-R theory states that the strength of an effect of a reward for a behavior (prosocial or procriminal) depends on the signaled summation of other rewards or costs for that behavior. As an example, an individual may not decide to use heroin simply because it is available, but also because he associates with heroin-using
peers and because he anticipates that the drug will provide a euphoric feeling. The eighth principle states that variations in signaled rewards and costs for a particular class of behavior (procriminal or prosocial) may result in variations in the probability of occurrence in a different class of behavior. For example, increasing signaled rewards for noncriminal behavior in a particular situation can reduce the probability of procriminal behavior occurring. The ninth principle of the PIC-R theory highlights the importance of the first eight principles in understanding and producing behaviors. Specifically, in applying the preceding principles, procriminal behavior can be reduced and prosocial behavior can be increased.

The tenth principle of the PIC-R theory states that by way of contingencies, geographical, historical and political-economic factors can influence behavior. For instance, an individual living in a community with a high crime rate living near friends and neighbors who are modeling deviant behaviors will be more likely to learn deviant behavior and consequently be more likely to exhibit deviant behavior. Related to the tenth principle, the eleventh principle specifies that there are two dimensions to the effects of systems on behaviors. The normative dimension refers to the behavioral prescriptions and proscriptions and the distribution of each in the system. The control dimension refers to the visibility of behaviors (prosocial or procriminal) to persons who control resources. Finally, principle twelve states that predictability of and the ability to influence behavior increases with individual assessment of reward and cost contingencies.
The Principles of Effective Intervention

Over the past two decades, researchers in the offender rehabilitation field have developed the Principles of Effective Intervention which provide a framework for the effective rehabilitation of offenders. The Principles of Effective Intervention take into consideration the PIC-R theory and provide specific, research-proven strategies for rehabilitating offenders and reducing recidivism. The principles have been drawn from the literature regarding the empirical evaluation of programs designed to rehabilitate offenders (see Andrews et al., 1990; Andrews & Bonta, 2007; Andrews, Bonta, & Hoge, 1990; Gendreau, 1996). Cullen & Gendreau (2000) indicate that analyses of “what works” programs, including meta-analyses, narrative reviews and individual program studies have been used to build the Principles of Effective Intervention. Further, much information has been derived from the field of psychology from research regarding behavior change (e.g., Bandura, 1977).

The Risk-Need-Responsivity Principle. From the Principles of Effective Intervention the Risk-Need-Responsivity (RNR) model was developed. The risk principle states that an offender’s tendency to recidivate can be reduced if treatment services are matched to the offender’s risk to re-offend (Bonta & Andrews, 2007). In short, high-risk offenders should receive intense treatment services, while low-risk offenders should receive less intense treatment services. Research has shown that low-risk offenders are relatively unlikely to recidivate, and providing intense programming to low-risk offenders can actually increase recidivism rates among this population (Bonta, Wallace-Capretta, & Rooney, 2000; Lowenkamp & Latessa, 2005). The need principle states that rehabilitation programming should focus on changing the criminogenic needs of
offenders. Criminogenic needs are dynamic risk factors that have been shown to be associated with criminal behavior (Bonta & Andrews, 2007). According to Bonta and Andrews (2007), criminogenic needs are susceptible to modification unlike static risk factors such as criminal history. Although offenders tend to have many needs to be addressed during treatment, not all needs have been shown to be associated with criminal behavior (e.g., Andrews et al., 1990; Andrews, Bonta, & Hoge, 1990).

Research has shown that rehabilitation efforts should focus on eight risk/need factors known as the “central eight” (Andrews & Bonta, 2007; Andrews, Bonta, & Wormith, 2006). The central eight include: 1) a history of antisocial behavior, 2) antisocial personality patterns, 3) antisocial cognition, 4) antisocial attitudes, 5) family/marital, 6) school/work, 7) leisure/recreation, and 8) substance abuse. Identifying an offender’s risk/need is paramount in providing appropriate rehabilitation programming. Measures such as the Level of Service Inventory-Revised (LSI-R; Andrews & Bonta, 1995) have been developed to assess risk/need in offender populations. Risk/need measures typically provide a composite score as well as subscale scores that can be used to tailor rehabilitation programming to each offender.

As noted earlier, the need principle states that rehabilitation interventions should be designed to target and change variables that are known to predict recidivism and crime, and inherent in this principle is that interventions should be developed based on criminological knowledge (Cullen & Gendreau, 2000). Research from Andrews and Bonta (2007) and Gendreau, Little and Goggin (1996) indicated that many of the prominent predictors of crime and recidivism are dynamic. These predictors include: (1) procriminal attitudes, values and cognitive-emotional states, (2) procriminal associates
and lack of interaction with prosocial others, and (3) procriminal personality factors, such as impulsiveness, risk-taking and low self-control (Andrews, 1995). Numerous studies have found the aforementioned predictors to be associated with criminal behavior among adults and juveniles (see, for example, Gendreau, 1996; Shields & Ball, 1990; Simourd, 1997; Simourd & Olver, 2002; Simourd & Van De Ven, 1999; Walters, 1996; Listwan, Van Voorhis, & Ritchy, 2007). Consequently, programs designed to reduce procriminal attitudes, associates and personality factors should reduce the likelihood of criminal behavior and recidivism. According to Andrews and Bonta (2007), noncriminogenic needs are also dynamic and subject to change, but are weakly related to crime and recidivism. Thus, an intervention targeting noncriminogenic needs should be expected to have little or no impact.

Responsivity is the final principle of the RNR model of offender rehabilitation. There are two types of responsivity. General responsivity states that offender intervention programs should be behavioral in nature (Cullen & Gendreau, 2000). Behavioral programs are effective in changing criminogenic needs and utilize techniques such as modeling, role-playing, reinforcement, graduated practice and cognitive restructuring. Gendreau (1996) reports that behavioral programs should be intensive in that an offender participates for 3 to 9 months, and the program occupies between 40% and 70% of an offender’s time. Cullen and Gendreau (2000) stress that cognitive-behavioral programs tend to be the most common forms of behavioral programs utilized with offenders. Cognitive-behavioral programs focus on two main goals: (1) work to restructure cognitive errors (e.g., thinking errors) in the offender, and (2) work to help the offender learn new prosocial cognitive skills.
Specific responsivity refers to a matching of program type, treatment approach and characteristics of facilitators to learning style and characteristics of offenders (Andrews & Bonta, 2007; Gendreau, 1996). This “matching” or “differential treatment” approach (see Palmer, 1974; Warren, 1969 for example) is not new to the offender rehabilitation field, but the specific factors that need to be considered in addressing specific responsivity are relatively unstudied. Offender characteristics such as race, gender, cognitive development, personality and motivation have been proposed as being potentially important variables that influence rehabilitation efforts (Andrews et al., 1990; Andrews & Bonta, 2007).

**Cognitive-Behavioral Interventions**

What follows is a description of cognitive-behavioral programming for offender rehabilitation. This section will describe how many of the most effective offender rehabilitation programs are developed employing cognitive-behavioral elements. Further, two of the most popular programs focus on thinking errors as a fundamental cause of criminal behavior. Finally, it will be argued that despite the importance placed on issues of specific responsivity, extant research has failed to examine potential gender and race differences with regard to thinking errors.

**The role of cognitive-behavioral interventions.** Noted earlier, through meta-analysis (e.g., Lipton, Martinson, & Wilks, 1975), cognitive-behavioral interventions have shown to be the most effective type of programming in the effort to rehabilitate offenders. Cognitive-behavioral interventions focus on the relationship between cognition and behavior and argue that problematic behaviors can be changed by making changes to
attitudes, beliefs and thought processes (Porporino, Fabiano, & Robinson, 1991). As applied to offender populations, the cognitive-behavioral approach posits that offenders think differently than non-offenders either because of lower moral development or because of faulty information-processing (e.g., Arbuthnot & Gordon, 1988; Gendreau & Ross, 1981).

Cognitive-behavioral interventions operate on the assumption that some offenders engage in criminal activities and become involved with the criminal justice system because they lack many of the cognitive skills that non-offending individuals have. For instance, an offender may falsely believe that in relation to someone who appears to be wealthy, the offender is entitled to steal from that wealthy individual because the wealthy individual can afford to have money stolen. Conversely, a non-offender would recognize the moral violation of stealing, and not engage in such an activity. Cognitive-behavioral programs for offenders are designed to teach offenders how to recognize their faulty cognitions (e.g., thinking errors) and negative behaviors and replace them with accurate cognitions and prosocial behaviors. In doing so, offenders learn the skills necessary to avoid engaging in future criminal behavior.

The effectiveness of cognitive-behavioral interventions. Elements of cognitive-behavioral theories have found their way into many offender rehabilitation programs. Aos and colleagues (2006) estimated a 6.3% reduction in crime outcomes for cognitive-behavioral-oriented offender rehabilitation programs, and cognitive-behavioral programs have been shown to be cost-effective as compared to other forms of rehabilitation (e.g., Aos, Phipps, Barnoski, & Lieb, 2001; Farrington, Petrosino, & Welsh, 2001). Research has shown cognitive-behavioral interventions to be effective with offender populations,

Explaining How Thinking Error Contributes to Behavior. Since the mid-1980s social information-processing models to explain social behavior have emerged (e.g., Dodge, 1985; Dodge & Crick, 1990; Dodge, Pettit, McClaskey, & Brown, 1986; Ladd & Crick, 1989; Rubin & Krasnor, 1986; Yeates & Selman, 1989). The social information-processing model proposed by Dodge (1986; Figure 1) details a linear sequential series of four processes that occur prior to the enactment of a behavior: 1) the “encoding process” in which an individual encodes available situational cues; 2) the “representation process” whereby an individual interprets the situation; 3) the “response search process” where an individual conducts a mental search for various possible responses to the situation; and 4) the “response decision process” where an individual selects his or her response to the situation (Crick & Dodge, 1994). Finally, based on the outcome of the four processes a behavior is enacted. Over the years, the model has been revised to include additional processes, and the model has been reconfigured to more closely resemble the process of a neural network rather than a linear and sequential representation (see Crick & Dodge, 1994). The revised model (Figure 2) includes six processes: 1) encoding of cues, 2) interpretation of cues, 3) clarification of goals, 4) response access or construction, 5) response decision, and 6) behavior enactment (Crick & Dodge, 1994). The “clarification of goals” process was added to the revised model and specifies that during this process the individual selects a goal or desired outcome.
(e.g., seek revenge, obtain money). As noted earlier, the revised model is not linear, but illustrates more of a neural network process whereby information is continuously being processed as the individual approaches the enactment of a behavior (Crick & Dodge, 1994).

Figure 2.1 A social information-processing model of children's social adjustment. Recreated from Dodge (1986).
At the center of Crick and Dodge’s (1994) revised social information-processing model is a “database” of information consisting of stored memories, acquired rules, social schemas and social knowledge. According to Crick and Dodge (1994), individuals continuously access this database as they proceed through each of the six processes. In turn, information from the database influences each process, and taken together with
various social cues and other variables, influences the behavior that will be enacted by the individual (Crick & Dodge, 1994). For example, if an individual has been physically attacked by a particular peer in the past, then when confronted by that peer in the future, the individual is going to remember (e.g., access his or her database) the outcome of the previous encounter and act accordingly. Crick and Dodge (1994) argue that an individual’s database not only contains information from past experiences, but has the capacity to store new information that is acquired during future encounters.

Noted earlier, several variables may work to influence each of the processes and the resulting behavior. Crick and Dodge (1994) suggest that information could be processed either in an automatic or controlled manner. Controlled processing is a more deliberate, conscious and reflective process versus automatic. Rabiner, Lenhart, and Lochman (1990) found that socially maladjusted children were able to process information adequately when using controlled processing, but not when using automatic processing. Preemptive processing has also been identified as a variable with the potential to affect the social information-processing process (Crick & Dodge, 1994). According to Costanzo & Dix (1983), preemptive processing is the analysis of information that does not follow the rules of formal information processing, but instead is rapid and irrational information processing. Preemptive processing is believed to be initiated in highly emotional situations (Crick & Dodge, 1994). Studies have shown evidence of preemptive processing leading to social maladjustment (e.g., Crick & Dodge, 1992; Dodge & Somberg, 1987).

Variables related to the development of an individual have also been implicated as potential influences to social information-processing. Crick and Dodge (1994) posit that
cognitive skills change with age. Specifically, the database at the center of the social information-processing model increases allowing an individual to choose from a greater pool of information. For example, as an individual grows older it is likely that he or she will experience more social situations and thus learn new ways to interact with others. Crick and Dodge (1994) also argue that with age an individual’s “attentional” ability develops allowing the individual to better detect subtle stimuli and focus on relevant rather than irrelevant stimuli (see, for example, Gibson & Spelke, 1983; Higgins & Turnure, 1984). Another variable believed to influence social information-processing is what Crick and Dodge (1994) term “rigidity.” The authors argue that over time an individual may begin to rely on a particular way of processing information. For example, an individual may begin to view the intents of others as hostile and over time with the continued perception of hostile intent, the individual may begin to automatically process social-information in this way and rely less on controlled processing of information.

Crick and Dodge (1994) discuss the use of social cues and schemata in relation to social information-processing. According to Gerrig (1988 as cited in Crick and Dodge, 1994) schemata organize information in an effort to facilitate the comprehension of information, thus aiding in the interpretation of a situation by allowing an individual to identify information as consistent or inconsistent (Bem, 1984 as cited in Crick and Dodge, 1994). Crick and Dodge note that, “reliance on schemata can result in the disuse of social cues in the immediate context, a situation that can lead to inappropriate social responses” (1994, p.83).

The social information-processing model presented by Crick and Dodge (1994) is a complex model to explain how an individual may proceed to interpret a situation, select
an outcome for the situation, choose a behavior and enact the behavior in an effort to achieve a selected goal. Further, the model provides explanation as to how the various steps in the process can be influenced by other variables such as cognitive ability, emotion, rigidity and past experience. That said, it is plausible that thinking error could influence the processing of social information thus resulting in antisocial behavior. For instance, consider a situation in which a group of individuals is contemplating breaking into a house to steal a television. An individual exhibiting clinically significant levels of the thinking error “entitlement” may process the situation and be more inclined to come to the conclusion that he or she is entitled to take the television—feeling no remorse for doing so. Conversely, an individual not exhibiting clinically significant levels of “entitlement” may process the situation differently believing that it would be wrong to steal the television and thus refusing to engage in the procriminal behavior.

In line with Crick and Dodge’s (1994) idea that over time certain ways of processing information could become more frequent or automatic (e.g., rigid), it is likely that offenders have developed and have used certain thinking errors over the course of their lives that have become engrained in their way of processing social information. Likewise, because of certain disadvantages some offenders may have been denied the opportunity for normal cognitive development or maturity. As such, offender rehabilitation programs are important in that they target thinking error in an effort to teach offenders how to more accurately interpret cues and behave in prosocial ways.
Thinking Error as a Focus of Cognitive-behavioral Interventions

While many offender rehabilitation programs incorporate cognitive-behavioral elements, at least two such programs have been designed to focus on thinking errors. These cognitive-behavioral programs have gained in popularity over the years and have been increasing in use as an intervention targeting offenders’ faulty information-processing (e.g., thinking errors). The Thinking for a Change program (Bush, Glick, & Taymans, 1997a) utilizes cognitive restructuring and skills to teach offenders to recognize thinking errors that can lead to deviant behavior (Golden, Gatchell, & Cahill, 2006). The program also teaches problem-solving and stresses interpersonal communication skills (Lowenkamp, Hubbard, Makarios, & Latessa, 2009). The Reasoning and Rehabilitation program (Ross & Fabiano, 1985) is an educational, skills-based intervention (Allen, Mackenzie, & Hickman, 2001). The program teaches offenders social skills, problem-solving, self-control and how to evaluate cognitions (Ross, Fabiano, & Ewles, 1988).

Common to both the Thinking for a Change and Reasoning and Rehabilitation cognitive-behavioral programs is the focus on thinking errors as a contributor to criminal behavior. The concept of thinking errors originates from the work of Yochelson and Samenow (1977). Through interviews with incarcerated offenders, Yochelson and Samenow (1977) noted that offenders had pervasive thinking processes that were different from non-offenders. In all, 52 thinking errors were identified that underlie the deviant behavior of offenders and increase the likelihood of an antisocial lifestyle (Mandracchia, Morgan, Garos, & Garland, 2007). The 52 thinking errors were grouped into one of three categories: criminal thinking patterns, process of thinking errors from
idea through execution, and automatic errors of thinking (Mandracchia, Morgan, Garos, & Garland, 2007). It was Yochelson and Samenow’s (1977) belief that changes in criminal behavior could be effected by altering the offender’s thinking patterns.

One model of criminal thinking comes from Glenn Walters (1995, 2002, 2003). Building on the work of Yochelson and Samenow, Walters (1990) argued that criminal behavior was derived from cognitive patterns that supply justifications and support for and rationalize criminal behavior. According to Walters (1990), antisocial behaviors were based on free choice, the continuation of criminal thinking is the fundamental expression of free choice, and developing a criminal’s sense of responsibility for his or her behavior is necessary to effect change. Walters and White (1989) developed eight cognitive thinking patterns termed “thinking styles.” These eight thinking styles include: 1) mollification: placing blame on external factors thus rationalizing criminal behavior, 2) cutoff: a disregard for thoughts that deter criminal behavior, 3) entitlement: an attitude of ownership, privilege and misidentification of wants as needs, 4) power orientation: outward displays of aggression intended to manipulate and control others, 5) sentimentality: attempts to atone for past criminal behavior through self-centered good deeds, 6) superoptimism: overconfidence in one’s ability to avoid the negative consequences of criminal behavior, 7) cognitive indolence: a tendency to take short-cuts in problem-solving, and 8) discontinuity: a disruption to thought processes which precludes the follow through of initially good intentions (Walters, 1995).

In relation to Yochelson and Samenow’s (1977) research, Walters adopted sentimentality and superoptimism directly, while power orientation was a combination of the “zero state” and “power thrust” thinking errors proposed by Yochelson and Samenow.
(Mandracchia, Morgan, Garos, & Garland, 2007). Walter’s cutoff thinking error was a
generalized version of Yochelson and Samenow’s “cutoff” thinking error, and
discontinuity was generalized from “fragmentation thinking errors” (Walters, 1990;
Walters, 2001). Walters developed mollification, entitlement and cognitive indolence
from his own clinical experience (Walters, 1990; Walters, 2001).

**Measuring the Effectiveness of Cognitive-behavioral Programs**

It has become increasingly common for funding agencies (e.g., SAMHSA, NIH,
NIDA) to require evaluations of funded programs. As such, community agencies
receiving funding will conduct basic pre/post evaluations of their programs as a measure
of effectiveness. For example, the measure the effectiveness of a reading program, clients
might receive an assessment that measures reading level prior to starting the program
(“pre” test) and again after completing the program (“post” test). Effectiveness of the
reading program is then gauged by comparing scores from the “pre” test to the “post”
test. In the preceding example, increases in reading level scores at post test would
indicate that the program is effective and working as designed.

Pre/post test evaluations of programs are typically the most common and the most
desired means by which to evaluation a program. There are two primary reasons for using
pre/post measures for program evaluation. First, community agencies are increasingly
facing cuts to funding, but are still being required to serve additional clients.
Consequently, limited resources are funneled to staff and resources needed to serve
clients not to resources for program evaluations. Second, the majority of community
agencies do not have staff who are experienced or have the education necessary to
conduct more sophisticated measures of program effectiveness. In short, community agencies are looking for a “quick and dirty” means by which to measure program effectiveness that will satisfy the requirements of funding agencies—pre/post evaluations are typically efficient, easy to conduct and require minimal staff resources.

For evaluations of criminal justice programming, policy dictates that recidivism as the preferred outcome measure. However, collecting recidivism data is a process that requires substantial resources on the part of the community agency. Evaluations using recidivism as an outcome variable require that recidivism data be collected at some time point after the client is released from the program—typically a year or more. Consequently, the effectiveness of a program cannot be readily determined. Further, as noted below, the use of recidivism as an outcome variable is problematic as many issues reduce its reliability.

This study explores the feasibility of measuring the effectiveness of CBT programming using thinking error as an outcome variable. Noted below, thinking error has the potential to directly measure the effectiveness of CBT programming in a way that is easy, efficient and economical for community agencies.

**Recidivism.** The current standard measure of effectiveness of most offender rehabilitation programs is predominantly recidivism. To illustrate this point, in a study by Maltz (1984), eleven states were investigated and in all routine evaluations of offender programming conducted in these states, recidivism was identified as the outcome variable of interest. Maltz (1984) argues that in measuring recidivism policy makers are basing the effectiveness of a program on failure rather than success. Further, Maltz (1984) found that agencies used recidivism as the outcome variable because it was less expensive to
collect, was related to the agency’s mission (e.g., reduce recidivism) and was the variable having the most bearing on policy.

There are several issues with the collection and use of recidivism as an outcome variable that may influence the interpretation of a program’s effectiveness. Hoffman and Stone-Meierhoefer (1980) note that varying the way recidivism is defined can result in differences in the effectiveness of different programs. For instance, some evaluations consider recidivism to only be a new arrest, while others consider recidivism to be conviction and incarceration. Further, definitions of recidivism can include probation violations or technical violations. Six of the eleven states in the study by Maltz (1984) considered a return to prison as the only indicator of recidivism. Consequently, an offender in a program in one of those six states would not be considered a failure (e.g., recidivism) for probation violations, technical violations or any other arrest unless he or she ultimately returned to prison.

Individuals such as judges, lawyers, and probation and parole officers can influence recidivism. Research has shown that parole officers can vary in their decisions to report technical violations and revoke an offender’s parole (e.g., Lerman, 1968; McCleary, 1978). Consequently, two offenders with the same exact violation could receive different sanctions, especially if each has a different parole officer. In the Maltz (1984) study, one parole officer stated, “There is great pressure on parole officers not to return parolees due to the overcrowded situation of our prisons” (p.53). Maltz (1984) continues by positing that the ability of a state to incarcerate offenders because of capacity issues will have an affect on recidivism rates, especially if recidivism is defined as a return to prison. It was also found that in some cases the amount of paperwork
required to process a parole violation could influence recidivism rates. Specifically, if officers had large amounts of paperwork, they were less likely to process an offender violation (Maltz, 1984).

Recidivism rates, and thus program effectiveness, can also be influenced by the availability and quality of criminal justice data available. Maltz (1984) notes that all state law enforcement agencies must report felony arrests to the National Crime Information Center (NCIC), thus felony arrest data is available to researchers. However, Maltz (1984) notes that prosecutorial and court criminal justice data is not compiled centrally like felony data that is reported to the NCIC. Consequently, arrest data from these agencies may not be as complete or readily accessible as the NCIC data. Correctional data (e.g., jail, prison and halfway house) is even less comprehensive. Maltz (1984) reports that most states do not include jail data in statewide criminal justice data, and few states can regularly track offenders who are given jail sentences. What’s more, Maltz (1984) argues that even if researchers were able to obtain comprehensive state criminal justice data on an offender, the data would be incomplete for offenders who had been arrested in a different state.

Finally, Maltz (1984) posits that differences in laws, procedures and policies can have an influence on rates of recidivism. For example, a program located in a state with mandatory sentencing will likely have higher recidivism rates than a program in a state that allows for discretion in sentencing. Similarly, a state utilizing electronic arrest records is likely to have programs that appear less effective than a state that uses paper arrest records because the electronic records would likely be more comprehensive than paper records. As evidenced above, the use of recidivism as an outcome measure of
program effectiveness is problematic. However, few other alternatives have been suggested or examined in the field.

**Thinking Error.** This study argues that recidivism is a problematic outcome variable for judging the effectiveness of offender rehabilitation programming. Further, it is an indirect measure of program effectiveness. For example, many offender rehabilitation programs work to teach offenders specific skills that promote prosocial behaviors that, in turn, reduce the likelihood of an offender engaging in criminal acts. That said, one of the goals of the Thinking for a Change cognitive-behavioral program (Bush, Glick, & Taymans, 1997b) is to assist offenders in recognizing their thinking errors and teaching them how to restructure those cognitions to reduce the likelihood of procriminal behaviors. Consequently, the restructuring of cognitions reduces influences that increase procriminal behavior, ultimately reducing the likelihood of the offender recidivating.

Measures of thinking error have been developed, but not utilized as a measures of cognitive-behavioral program effectiveness. Walters (1995) developed the Psychological Inventory of Criminal Thinking Styles (PICTS) to assess thinking errors in offender populations. Since that time other assessments of thinking error have been developed (e.g., the Criminal Thinking Scales [CTS], Knight, Garner, Simpson, Morey, & Flynn, 2006; the Measure of Offender Thinking Styles [MOTS], Mandracchia, Morgan, Garos, & Garland, 2007). The PICTS (Walters, 1995) provides a measure of eight separate thinking errors (“styles”) hypothesized to influence the behavior of offenders. The eight thinking styles measured by the PICTS were developed from the work of Yochelson and Samenow (1977) and are directly related to the lessons presented to offenders during
group sessions. This study suggests that the measurement of offender thinking error may yield a direct and more efficient means of evaluating the effectiveness of cognitive-behavioral programming.

**Thinking Error as a Specific Responsivity Issue.** As noted previously, the measurement of thinking error as a more economical and efficient means to evaluate the effectiveness of cognitive-behavioral programs designed to target thinking errors has not been examined. What’s more, the examination of differences in thinking errors by gender and race has been neglected. Recall that specific responsivity refers to the notion that individual characteristics make an offender more or less receptive to rehabilitation programming (Andrews, Bonta, & Hoge, 1990). Thus, identifying differences in thinking errors based on race or gender is important because in standing with the specific responsivity principle, if differences do exist, the “one size fits all” approach that currently reflects the majority position of offender rehabilitation policy in the United States may not be the most effective means of rehabilitation for all offender types. Given limited financial resources, it is in the best interest of criminal justice policy to support and sustain only the most efficacious offender rehabilitation programs.

**Subgroup Differences that May Influence Specific Responsivity.** Subgroup differences may have an influence on specific responsivity in two ways. First, differences in thinking error scores could exist prior to CBT intervention. Such differences might be explained by individual characteristics or experiences of offender subgroups such as family or social environment. For example, a particular offender subgroup might have grown up being regularly exposed to physical aggression by a parent, whereby the offender may have learned that the use of physical aggression is an acceptable behavior.
for reaching one’s goals. As such, this particular offender subgroup might show higher
degrees of thinking errors related to aggression, such as “cutoff” or “power orientation.”

A second type of subgroup difference that could exist relates to cognitive change.
Differences in cognitive change might be explained in terms of the offender’s ability to
learn and is more directly related to the traditional concept of responsivity. For instance,
if females have a more developed cognitive capacity than males, then one might expect
females to be more adept at learning the CBT material and consequently show a greater
degree of change (e.g., less thinking error) following participation in the CBT program.

**Explaining Gender Differences in Thinking Error.** Differences in terms of
gender have been found in virtually every field of study. Given the plethora of research
literature regarding gender differences, it is plausible that differences in thinking error
among males and females would exist as well. A very small number of studies have
examined gender differences in relation to responsivity (e.g., Dobash, Dobash, &
Gutteridge, 1986; Kearney-Cooke, 1999; Wooldredge & Masters, 1993), and none were
found that examined differences in thinking error.

Research examining gender differences in other areas suggest that differences in
thinking error related to gender may exist. Connor, Steingard, Anderson and Melloni
(2003) found that in aggressive adolescent males and females, males displayed
significantly higher levels of hyperactivity/impulsivity. Studies examining gender
differences in Attention-Deficit Hyperactivity Disorder (ADHD) have found that females
have less attention problems than boys and females are less hyperactive (Achenbach,
1991; Bauermeister, 1992). Because the “cutoff,” “cognitive indolence,” and
“discontinuity” thinking errors are related to hyperactivity and/or impulsivity, male
offenders with high levels of hyperactivity/impulsivity could conceivably indicate high
levels of thinking error. Although not statistically significant, it was also found that male
adolescents displayed levels of aggression that were more severe and intense than that of
and Robbins (1989) found females engage in alternate forms of pathology in that distress
in internalized rather than externalized like in males. Studies indicate that in an effort to
discipline children parents more readily respond to males with physical punishment
(Campbell, 1990; Patterson, 1982). As a consequence males may be socialized to view
physical aggression as an acceptable behavior—a finding that has implications that may
yield higher levels of the “power orientation” thinking error in males. Also potentially
affecting “power orientation,” Anastasi (1984) and Block (1983) have shown that males
tend to be more physically aggressive and more dominating over peers than females, and
Eme and Kavanaugh (1995) found that males tend to receive harsher discipline than
females. Studies suggest that in terms of emotion, females may be more likely to
internalize (e.g., sadness, guilt) as compared to males with regard to social-information
processing (Galambos, Leadbeater, & Barker, 2004; Hankin & Abramson, 2001). As
such, the “sentimentality” thinking error is more likely to be influenced by females than
by males. Among males and females arrested for domestic violence, males commonly
attributed their behavior to external factors (Bograd, 1988; Cantos, Neidig, & O'Leary,
1993; Dutton, 1986). Similarly, in a study examining gender differences with regard to
attribution of various degrees of violence ranging from verbal aggression to very severe
violence, males were more likely to attribute the cause of the aggression to the victim
(Bryant & Spencer, 2003). These studies imply that males may indicate higher levels of
the “mollification” thinking error in comparison to females. Potentially impacting the “superoptimism” thinking error, a study by Leonard (1982) found that females typically commit petty crimes and their level of involvement of more serious crimes is often assumed to be minor in comparison to males. Further, research has shown that when females engage in a delinquent act the involvement is typically of a less serious nature than males (Giordano, Cernkovich, & Rudolph, 2002). Feminist theories have linked female gender to oppression and male gender to privilege (Collins, 2000; Hill and Sprague, 1999) potentially impacting the “entitlement” thinking error.

In terms of factors that may influence learning during CBT programs and thus effect changes in thinking error from pre to post, Bennett, Farrington and Huesmann (2005) note that most researchers agree that gender differences exist in the development of social cognitive abilities that are related to biological differences and differences in socialization (see Chess & Thomas, 1984; Prior, Smart, Sanson, & Oberklaid, 1993; Taylor, 1985). Differences in the organization of brain functioning can result in different information-processing strategies for males and females (Caplan & Caplan, 1997; Richardson, 1997). Attention-Deficit Hyperactivity Disorder (ADHD) is 3-5 times more common in males than females, and males are 10 times more likely to suffer from dyslexia (Barkley, 1998; Hyde & McKinley, 1997). Chess and Thomas (1984) found that females develop physically, cognitively and socially sooner and quicker than males, and Denno (1985) argues that as a result females may have an earlier ability to learn and respond to environmental stimuli making them less vulnerable, physically and cognitively. Further, Silverman and Marion (1992) found females to be more aware of
environmental cues and stimuli. Finally, Banerjee (1997) suggests that females can encode nonverbal expression better than males.

As a whole, there have been numerous studies which suggest that gender differences in thinking error or the acquisition of skills through CBT programming to reduce thinking error may exist. Some gender-related variables are directly related to thinking error (e.g., aggression) while others are related to the acquisition of skills that may help to reduce errors in thinking (e.g., cognitive ability). Still others may both directly influence thinking error and the acquisition of skills to reduce thinking error.

**Explaining Racial Differences in Thinking Error.** Considerably less research was found that would imply that differences in terms of race would exist with regard to differences in thinking error. In an examination of proactively and reactively aggressive adolescents, Mayberry and Espelage (2007) found the reactively aggressive group to be overrepresented by African-American adolescents. Both reactive and proactive aggression are physical forms of aggression. However, reactive aggression is emotionally charged and impulsive aggression initiated in response to a perceived threat or blocking of a goal (Dodge & Schwartz, 1997). Proactive aggression lacks the impulsivity that characterizes reactive aggression and is in response to the desire to achieve a particular outcome (e.g., to control another individual, to attain property; Berkowitz, 1993). Reactive aggression could likely influence the “cutoff” and “cognitive indolence” thinking errors, while proactive aggression could influence the “power orientation” thinking error. Studies have found that parents of African-American children spanked their children more frequently than parents of Caucasian children (Day, Peterson, & McCracken, 1998; Giles-Sims, Straus, & Sugarman, 1995; Lansford, Deater-Deckard,
Dodge, Bates, & Pettit, 2004). Further, researchers have found that the effect of physical discipline is influenced by a cultural context (Lansford, Deater-Deckard, Dodge, Bates, & Pettit, 2004). African-American children view spanking as a legitimate parenting practice, while Caucasian children view spanking as frightening and see their parents as out of control (Lansford, Deater-Deckard, Dodge, Bates, & Pettit, 2004). That said, Lansford and colleagues (2004) found that African-American children displayed fewer externalizing behaviors as compared to Caucasian children. However, it should be noted that the study examined only sub-abuse levels of punishment. The findings of the Lansford et al. (2004) study could be interpreted to suggest that scores on the “cutoff” and “power orientation” thinking error scales may differ according to race. Studies examining racial differences with regard to ADHD indicate higher rates among African-American individuals (Cuffe, Moore, & McKeown, 2005). It is plausible to believe that the “cognitive indolence” and “discontinuity” thinking errors would be greater among African-American offenders. Also potentially impacting racial differences in thinking error, the current criminal justice system has been shown to be especially biased against African-American individuals (see Taifa, 2003). For example, sentencing requirements for crack cocaine, which is predominately used by African-American individuals, are significantly more severe than sentencing requirements for powdered cocaine, which is predominately used by Caucasian individuals. Further, studies have shown that sentences at or above the mandatory minimum range for crimes committed by African-American offenders exceeded sentences at or above the mandatory minimum for crimes committed by Caucasian offenders. Research also indicates that criminal justice policies, including prosecutorial policies, have created an environment in which law enforcement efforts
target inner-city communities predominately populated by African-American individuals. All of these factors could greatly influence racial differences in thinking error, including “mollification,” “entitlement,” “sentimentality,” and “superoptimism.”

Racial differences could also influence the acquisition of information presented during the CBT programming and thus affect changes in thinking error across time (e.g., pre-CBT program to post-CBT program). For instance, studies have shown differences in cognition between individuals from different cultures (e.g., Anderson, 1988; Grant & Sleeter, 1989; Ishii-Jordan & Peterson, 1994; Willis, 1993). Baruth and Manning (1992) state that if an individual’s cognitive processing, which is culturally influenced, is not compatible with the cognitive style of a particular task, problems in learning can result (see also, McIntyre, 1996; Vogt, Jordan, & Tharp, 1987). The education literature indicates that curricula and methods of teaching that are generally used in educational settings often are not matched to the cognitive styles and experiences of culturally different students (e.g., Anderson, 1988; Franklin, 1992; Ishii-Jordan & Peterson, 1994; Vasquez, 1990), suggesting that similar issues warrant consideration when delivering cognitive-behavioral programming to culturally different offenders.

Although research indicates that personal characteristics of offenders are important considerations related to the successful rehabilitation of offenders, more work is needed (Andrews et al., 1990; Andrews & Bonta, 2007). Andrews and Bonta (2007) argue, “Only a few of the possible variables that come under the responsivity principle have been studied. Theories of personality and crime suggest a host of possibilities that have barely been considered by researchers in corrections” (p. 284). Given the overwhelming evidence in support of the efficacy of cognitive-behavioral approaches to
offender rehabilitation, it is vital to move forward and begin examining the potential specific responsivity factors that may increase (or decrease) the effectiveness of cognitive-behavioral interventions for differing subgroups of offenders.

**Evaluating Program Effectiveness.** Fischer (1942) argues that in analyzing public policy four “discourses” are required: 1) program verification, 2) situational validation, 3) societal vindication, and 4) social choice. According to Fischer (1942), program verification includes questions about a program that are typically considered the basic tools of evaluation (e.g., does the program accomplish its goals?). Fischer (1942) posits that the majority of policy evaluation efforts only focus on the program verification discourse, and that the other three “discourses” should be included in the process to evaluate policies to more effectively create policies that work for the good of society.

Situational validation, the second discourse, relates to whether a program’s objectives are relevant to the situation (Fischer, 1942). The third discourse, societal vindication, examines if the goals of a program meet a function for society as a whole, and social choice, the fourth discourse, deals with ideological issues (Fischer, 1942). With regard to criminal justice policies designed to reduce the incarceration of non-violent offenders and instead sentence them to community-correction programs in an effort to rehabilitate them, cognitive-behavioral programs as a whole seem to be accomplishing their intended goals. Further, the objectives of cognitive-behavioral programs are relevant to the problem of prison overcrowding and efforts to reduce spending, while maintaining public safety. Thus, cognitive-behavioral programs are valuable to society. However, as evidenced by varying rates of effectiveness, there is much that needs to be done to understand these variations and further increase the
effectiveness of cognitive-behavioral programs (e.g., Aos, Phipps, Barnoski, & Lieb, 2001), thus increasing their utility to society.

**Conclusions**

The intention of this chapter was to provide a context for which the research questions proposed in this dissertation are important for the field of offender rehabilitation and the policies that guide the field. Specifically, that a measure of thinking error may provide a more efficient means by which to measure CBT program effectiveness. Further, that gender and race are important specific responsivity variables that have not been well studied and thus warrant examination in an effort to better understand variables that may impact the effectiveness of cognitive-behavioral interventions for offenders. A historical review of the approaches to punishment and rehabilitation in the United States was presented that painted a picture of criminal justice policy predominantly favoring offender rehabilitation despite what initially appeared to be largely failing programs. The Psychology of Criminal Conduct (Andrews & Bonta, 2007) was presented as a theory that incorporates elements of other theories of criminal behavior to provide a broader context that more adequately explains criminal behavior. The Principles of Effective Intervention (Andrews & Bonta, 2007) framework illustrates the advances that have been made in identifying evidence-based approaches that increase the effectiveness of offender rehabilitation programming. Drawn from the Principles of Effective Intervention, the responsivity principle posits that cognitive-behavioral interventions should be employed because they are the most effective approaches in rehabilitating offenders. Such programs focus on thinking errors as the fundamental cause
of antisocial behavior and thus identification and modification of thinking errors in offenders will result in reductions in procriminal behaviors.

Despite the vast amount of research guiding the offender rehabilitation field, little is known regarding the feasibility of utilizing thinking error rather than recidivism as an outcome variable to measure CBT program effectiveness. Likewise, little is known regarding the variables of specific responsivity, including race and gender differences related to thinking errors. Given the extant literature in other fields regarding race and gender differences it would be expected that African-American offenders would exhibit higher levels of mollification, cutoff, entitlement, power orientation, sentimentality, cognitive indolence and discontinuity thinking errors, while Caucasian offenders would exhibit higher levels of superoptimism thinking error. Male offenders would be expected to indicate higher levels of mollification, cutoff, entitlement, power orientation, cognitive indolence and discontinuity thinking errors, while female offenders would have higher levels of sentimentality and superoptimism thinking errors.

This study attempts to make a contribution to the field by examining the feasibility of using the outcome variable of thinking error as an alternative to recidivism, and by examining the issues of specific responsivity as they relate to potential gender and race differences in thinking errors among offenders. The findings may prove important in guiding changes in criminal justice policy that has traditionally employed a singular approach to rehabilitating offenders of different genders and races with cognitive-behavioral programs. What’s more, findings may indicate that the use of thinking error as an outcome variable to measure program effectiveness provides a more feasible means by
which community agencies can evaluate their programs while being restricted by limited financial and staff resources.
CHAPTER III

METHODS

Despite a substantial blow to the field of offender rehabilitation as a result of Martinson’s (1974) paper which criticized the effectiveness of offender rehabilitation efforts, over the last four and a half decades researchers have made great strides in discerning variables important to the efficacious treatment of offender populations. As a result, several principles have been identified that when followed greatly increase the effectiveness of offender rehabilitation programming (Gendreau, 1996). One of the Principles of Effective Intervention, the general responsivity principle, posits that cognitive-behavioral approaches should be employed to effect the greatest reductions in recidivism (Robinson, 1995; Robinson, Grossman, & Porporino, 1991; Ross, Fabiano, & Ewles, 1988). The specific responsivity principle argues that in addition to the general considerations of responsivity, other variables specific to each individual such as gender, race and learning style are important to consider in increasing the effectiveness of an offender rehabilitation program. However, research examining the issues of specific responsivity is limited and thus precludes the formation of concrete guides for criminal justice policy with regard to offender rehabilitation efforts.

The purpose of the current study is to extend the extant research in the field of offender rehabilitation by examining specific responsivity in the context of a cognitive-
behavioral intervention for offenders. In doing so, it is assumed that cognitive-behavioral programming, including the Thinking for a Change program (Bush, Glick, & Taymans, 1997a) is on its own merit effective in reducing recidivism (see Fabiano, Porporino, & Robinson, 1991; Izzo & Ross, 1990; Landenberger & Lipsey, 2005; Lowenkamp, Hubbard, Makarios, & Latessa, 2008; Ross, Fabiano, & Ewles, 1988; Ross & Fabiano, 1985; Wilson, Bouffard, & McKenzie, 2005). The present study sought to discern group differences in thinking errors (of which the Thinking for a Change program targets) that may impact the efficacy of cognitive-behavioral programming for offenders. Current policy regarding the use of cognitive-behavioral interventions with offenders is that cognitive-behavioral interventions are equally effective regardless of gender or race. Should gender or race differences be found, it has important implications for criminal justice policy with regard to increasing the efficacy of cognitive-behavioral interventions for offenders.

The present study employed a novel approach to measuring the effectiveness of cognitive-behavioral interventions for offender populations. Traditionally, program effectiveness has been measured using recidivism as an outcome variable (see, for example, Landenberger & Lipsey, 2005). As such, criminal justice policies have been guided by this approach. The present study examined cognitive change as a measure of program effectiveness and argued that cognitive change is a potentially more efficient way to measure program effectiveness in that it can be measured immediately rather than one year or more after an offender is released from custody as is the case using recidivism as an outcome variable for program effectiveness.
Research Questions

Extant research suggests that individual characteristics may be important variables to consider with regard to the effectiveness of cognitive-behavioral interventions for offender populations. The proposed study sought to answer three primary research questions. First, are there differences between males and females with regard to thinking errors? Specifically, a) Do thinking errors differ for males and females prior to participating in a cognitive-behavioral intervention?; b) Do thinking errors differ between males and females following participation in a cognitive-behavioral intervention?; and c) Are there differences between males and females in terms of cognitive change (e.g., changes in thinking errors) following participation in a cognitive-behavioral program (e.g., are there decreases or increases in certain types of thinking errors for males but not for females following intervention)?

Second, are there differences in thinking errors with regard to race? Specifically, a) Do differences in thinking errors exist between Caucasian and African-American offenders preceding participation in a cognitive-behavioral intervention?; b) Do differences in thinking errors exist between Caucasian and African-American offenders following participation in a cognitive-behavioral intervention?; c) Do differences in cognitive change exist between Caucasian and African-American offenders following participation in a cognitive-behavioral intervention (e.g., are there decreases or increases in certain types of thinking errors for African-American offenders but not for Caucasian offenders following intervention)?
Third, are there specific variables, including certain thinking errors that can predict whether an offender will successfully or unsuccessfully complete participation in a CBCF program.

To answer the research questions proposed, a measure of thinking error was administered prior and subsequent to participation in a cognitive-behavioral intervention for offenders sentenced to a community-based correctional facility. Demographic and programmatic data was collected from offenders upon intake to the CBCF facility and just prior to discharge from the facility and was analyzed to assess differences in thinking error and cognitive change with respect to gender and race.

**Treatment and Setting**

**Oriana House, Inc.** Oriana House, Inc. is a large non-profit agency established in 1981 that provides services to criminal justice-involved individuals. The agency is nationally and locally recognized as a leader in the areas of substance abuse treatment and rehabilitative community corrections. Oriana House, Inc. encompasses nationally-accredited residential and non-residential community corrections programs serving urban Cuyahoga and Summit Counties, Ohio, and the rural counties of Crawford, Richland, Ottawa, Sandusky, Seneca, Wyandot, Ashland, Erie and Huron. Oriana House, Inc. served over 12,000 offenders in 2008.

**Community-based Correctional Facility.** Among the 14 facilities and over 40 different programs that Oriana House, Inc. operates, the agency operates four Community-based Correctional Facilities (CBCFs). Two CBCFs (one male and one female) are located in Akron, Ohio and two others (one male and one female) are located
in rural Tiffin, Ohio. Ohio’s CBCF program was established in 1978 providing state funding to aid local criminal justice systems to reduce incarcerations to prison. Funding for construction and operation of CBCFs comes from the Ohio Department of Rehabilitation and Correction. Oversight of each facility is governed by a Board comprised of County Common Pleas Judges and members appointed by County Commissioners.

Community-based Correctional Facilities are considered the most restrictive sentencing option available to judges, with regard to community-based sanctions. The programs provide an alternative to non-violent felony offenders that provides comprehensive programming that addresses offender needs including, but not limited to, drug treatment, education, employment, and family and personal relationships. The goals of CBCF programs are to reduce state prison overcrowding, reduce taxpayer costs, maximize public safety, reduce recidivism, provide successful community reentry and provide rehabilitative services.

Community-based Correctional Facilities are designed to provide residential services to clients for up to six months. Successful completion of the CBCF program requires that an offender participate in and complete four phases. Phase I begins upon intake to the facility and dictates that the client be restricted to the facility for a minimum of 30 days. During this time the offender is assessed for substance abuse issues, education and employment needs, and cognitive-behavioral deficits and other needs. As appropriate, offenders begin participation in substance abuse counseling, education, employment, cognitive-behavioral and other programming.
Phase II provides an opportunity for the offender to earn permission to leave the CBCF facility for pre-approved appointments that include job-searching/interviewing, vocational training, attendance in recovery groups and medical visits. As necessary, offenders continue to participate in in-house programming such as cognitive-behavioral classes. In Phase III the offender has obtained employment and/or is enrolled in education. The offender is permitted to leave the facility for scheduled work or education activities and may earn passes to leave the facility to visit family. Aftercare programs such as chemical dependency relapse prevention support groups begin during this phase.

During the final phase, offenders are prepared to reenter into the community. This includes establishing stable housing, demonstrating fiscal responsibility and developing (as appropriate) linkages in the community to support prosocial behavior. Upon completion of the fourth phase offenders are released into the community for a week-long “transitional pass” in which the offender is subject to random recall to the facility to verify compliance (e.g., clean urine drug screen, reporting to work). At the conclusion of the transitional pass offenders are required to return to the CBCF facility where program staff verify compliance with the rules of the transitional pass period and, if appropriate, the offender is released back to community supervision under the custody of the offender’s probation officer.

**Oriana House, Inc. operated CBCFs.** The male CBCF in Akron, Ohio was opened in 1992 and has 160 beds available for offenders. The Akron, Ohio-based female CBCF was opened in 2001 and has 83 beds available to serve offender clients. The Tiffin, Ohio CBCFs were opened in 1999 and 2007 for males and females, respectively. The male facility contains 54 beds and the female facility contains 35 beds. Length of
stay in any CBCF program is based on risk/need level as determined by the Level of Service Inventory-Revised (LSI-R; Andrews & Bonta, 1995), and can range from as little as a few days up to a maximum of about 6 months. In 2008, the Akron-based CBCFs served 602 offenders. Nearly 75% (446) were male and 25.9% (156) were female. In terms of race among male offenders in the Akron CBCF facilities, 49.8% (222) were African American, 48.9% (218) were Caucasian and 1.4% (6) were of another race. Female offenders in the Akron CBCF facility were comprised of 31.4% (49) African American, 66.0% (103) Caucasian and 2.5% (4) other races. The Tiffin, Ohio-based CBCF served 219 offenders in 2008. Of the 219 offenders served, 77.6% (170) were male and 22.4% (49) were female. The majority of male offenders were Caucasian (68.8%, n=117), African-American offenders comprised 21.2% (36) of the population and 8.2% (14) were of other races. With regard to female CBCF clients, 85.7% (42) were Caucasian, 6.1% (3) were African-American and 6.1% (3) were of other races.

Measures

Client Management Information System (CMIS). Oriana House, Inc. maintains a proprietary database that is used to collect information about and track the progress of each offender sentenced to any of the programs operated by Oriana House, Inc. The CMIS database contains demographic, sentencing and program-specific data for each client, including client name, birth date, age, urine drug screen results, intake and discharge date, LSI-R score, referring judge and arrest offense and level. Demographic and sentencing data are entered into the CMIS database by Oriana House, Inc. Intake Specialists during an initial screening interview conducted at intake to any Oriana House,
Inc. facility or program. The CMIS database also allows caseworkers, counselors and other program staff to enter group notes, observation and incident reports and other treatment notes and information.

**Level of Service Inventory-Revised (LSI-R).** The LSI-R (Andrews & Bonta, 1995a) was developed as a third generation risk/need offender assessment. The LSI-R is a 54-item theoretically-based assessment instrument derived primarily from the PIC-R theory that contains questions comprised of items that research has found to be associated with procriminal behavior (Andrews & Bonta, 2007). In addition to providing a composite risk/need score, the LSI-R yields ten domain scores that include: 1) ten criminal history questions, 2) ten education and employment questions, 3) two financial questions, 4) four marital and family questions, 5) three accommodation questions, 6) two leisure and recreation questions, 7) five companions questions, 8) nine alcohol/drug problems questions, 9) five emotional/personal questions, and 10) four attitudes/orientation questions (Andrews & Bonta, 1995a).\(^1\)

LSI-R scores are categorized into low (0-13 for males, 0-9 for females), low/moderate (14-23 for males, 10-19 for females), moderate (24-33 for males, 20-30 for females), moderate/high (34-40 for males, 31-39 for females) and high (41+ for males, 40+ for females) risk/need. LSI-R questions primarily assess criminogenic need in offenders and therefore the LSI-R can be used to assess change. The assessment is a semi-structured interview that is administered by a trained criminal justice practitioner (e.g., probation officer, caseworker).

The LSI-R has been shown to have good reliability, convergent and dynamic validity and factor structure (see for example, Andrews & Robinson, 1984; Andrews,
The Psychological Inventory of Criminal Thinking Style version 4.0 (PICTS). The PICTS was initially introduced in 1995 (Walters, 1995). It has since been revised three times to yield an 80-item self-report assessment with Likert-type responses (e.g., strongly agree, agree, uncertain, disagree) that assess Walters’ (1990) eight types of criminal thinking. The PICTS also contains two validity scales. The confusion scale identifies respondents who may have “faked bad,” randomly responded, or were unable to read or understand the question items. The defensiveness scale detects respondents who may be “faking good” to create a favorable impression.

The PICTS contains four factor scales (Problem Avoidance, Interpersonal Hostility, Self-assertion/Deception, and Denial of Harm), two general content scales (Current and Historical Criminal Thinking), and a special scale (Fear of Change). The eight thinking styles scales include mollification, cutoff, entitlement, power orientation, sentimentality, superoptimism, cognitive indolence and discontinuity and are the focus of the PICTS scale (Walters, 1995). Raw scores are converted to T-scores for each thinking error scale, and higher thinking error scale scores indicate a stronger presence of a particular thinking error. With regard to the thinking style scales, research has shown the PICTS to demonstrate good reliability (Walters, 1995; Walters, 2002), concurrent
validity (Walters, 1998; Walters, White, & Denney, 1991) and predictive validity (Walters, 1996; Walters, 1997; Walters, 2002; Walters & Di Fazio, 2001; Walters & Elliot, 1999).

**Cognitive-Behavioral Programming.** Oriana House, Inc. has been using cognitive-behavioral programming curricula since April 2005. From April 2005 through August 2009 over 635 cognitive-behavioral groups have been completed that have served over 5,000 offenders. The cognitive-behavioral programming in place at Oriana House, Inc. is designed to assist offenders in recognizing and identifying thinking errors that lead to procriminal behavior. The programs also teach behavioral strategies to assist offenders to prosocially resolve procriminal patterns of thought.

To ensure fidelity of the cognitive-behavioral programming at Oriana House, Inc., a Cognitive-Behavioral Coordinator oversees the development and implementation of the programs and training of Cognitive-Skills Specialists and Behavioral Facilitators who run the cognitive-behavioral program groups. The agency has several staff members who have been officially trained through the National Institute of Corrections (NIC) to provide the Thinking for a Change curriculum (Bush, Glick, & Taymans, 1997a) and train others in the use of the program (described below). Further, ongoing training is provided and required of all cognitive-behavioral staff and is verified annually. A Quality Assurance Protocol and Quality Assurance Tool were developed and are used to assess the fidelity of cognitive-behavioral programming throughout the agency.

Oriana House, Inc. utilizes four separate cognitive-behavioral curricula. In addition to the Thinking for a Change curriculum (Bush, Glick, & Taymans, 1997a), three other curricula were developed. Two curricula, “Cognitive Self-change” and
“Boosters” are derived from the Thinking for a Change curriculum. The “Thinking Errors” curriculum is adapted from the “Commitment to Change” curriculum developed by Stanton Samenow (1994). All cognitive-behavioral programs focus on the identification and modification of thinking errors.

*Thinking for a Change Program.* The Thinking for a Change curriculum was developed for and funded by the NIC. As a policy, the NIC provides the Thinking for a Change curriculum free of charge and encourages its use as an evidenced-based cognitive-behavioral program for offenders effective in reducing recidivism (National Institute of Corrections, 2010a). The program is appropriate for use in prisons, jails, community corrections, probation and parole supervision settings serving adult and juvenile males and females (National Institute of Corrections, 2010b). More than 6,000 individuals working in the criminal justice system have been trained to facilitate the Thinking for a Change program and more than 300 other individuals have been trained to prepare other staff to deliver the program (National Institute of Corrections, 2010b).

The Thinking for a Change curriculum consists of 22 group sessions which are limited to 12 participants. It is recommended that group meetings convene no more than three times per week. Groups are facilitated by two certified professionals who have completed the NIC Thinking for a Change training program. Sessions are explicitly scripted and state the content to be covered and the objectives of each group meeting. Sessions are designed to include role-playing, review of previous lessons and homework assignments that help offenders practice skills. The curriculum is comprised of three main parts. Sessions 1-9 cover cognitive restructuring, sessions 10-15 cover social skills training and sessions 16-22 cover problem-solving.
The first four sessions of the curriculum include introductions, expectations and a course overview of the three main parts of the program. Initial sessions focus on cognitive restructuring and self-change, which involves the use of self-evaluation and self-correction techniques. The sessions are designed to teach offenders how to self-reflect, recognize underlying attitudes, feelings and beliefs and to change attitudes, feeling and beliefs when they are maladaptive. Sessions five and six of the Thinking for a Change curriculum focus on teaching and practicing objective analysis of thoughts, attitudes and feelings. The seventh session teaches offenders to recognize thought processes that increase their likelihood of breaking a rule or hurting someone (e.g., getting into “trouble”). Session eight focuses on assisting offenders in learning prosocial ways of thinking about situations that ultimately reduces the likelihood of procriminal behavior. The ninth session is designed to allow offenders to practice cognitive self-change. During this session offenders present “thinking check-ins” in which each offender reports on a situation that could have resulted (or did result) in a behavior that was not prosocial. The thinking check-in exercise requires that the offender record the thoughts and feelings that were experienced, identifying the antisocial thoughts and feelings and describing how new ways of thinking about the situation were used (or could have been used) to increase prosocial behavior.

Sessions 10-15 focus on social skills training and attempt to build social skills while continuing to emphasize the use of cognitive restructuring. The first three sessions teach empathy and perspective-taking with sessions 10-12 designed to help offenders identify feelings, understand others’ feelings and respond to others’ feelings, respectively. The thirteenth session helps offenders to prepare for and work through
stressful conversations. The final two sessions teach skills to manage and respond to anger in a manner that reduces the likelihood of acting out and teaches prosocial ways of responding to accusations of wrong-doing.

The problem-solving sessions (sessions 16-22) teach skills that offenders can use to prosocially interact with the world and avoid future trouble. Session 16 introduces the “conflict cycle” which is comprised of thoughts, feelings, beliefs and actions that increase the likelihood of escalating a maladaptive situation. The final six sessions introduce six problem-solving steps—one step is covered per session. The steps include, 1) stop and think, 2) describe the problem, 3) get information to set a goal, 4) consider the choices and consequences, 5) choose, plan do, and 6) evaluate.

There are two tracks of the Thinking for a Change program. Moderate-risk male (LSI-R score: 24-33) and female (LSI-R score: 20-30) offenders are referred to the moderate-risk Thinking for a Change program. High-risk male (LSI-R score: 34+) and female (LSI-R score: 31+) offenders are referred to the high-risk Thinking for a Change program. The moderate-risk program excludes the optional social skills sessions (sessions 2, 3, 4) for a total of 19 sessions. The moderate-risk program meets for 90 minutes twice each week for nine weeks. The high-risk program includes the three optional social skills sessions for a total of 22 sessions. The high-risk program meets for 135 minutes three times per week for 7 weeks.

**Thinking Errors Program.** The Thinking Errors cognitive-behavioral program consists of a moderate- and high-risk track. Moderate-risk male (LSI-R score: 30-33) and female (LSI-R score: 20-30) offenders are referred to the moderate-risk track. High-risk male (LSI-R score: 34+) and female (LSI-R score: 31+) offenders are referred to the
high-risk track. Both tracks utilize the “Commitment to Change” program (Samenow, 1994). The moderate-risk program teaches five of the most common thinking errors that lead to procriminal behavior, while the high-risk program covers all eight thinking errors. The moderate-risk Thinking Errors groups meet weekly for 90 minutes over a 5-week period. The high-risk groups meet weekly for 90 minutes over an 8-week period.

**Cognitive Self-change Program.** The Cognitive Self-change program is provided for all low-risk clients (males with LSI-R scores 14-23 and females with scores 10-19). The program is derived from sessions five through nine of the Thinking for a Change program. These sessions include: 1) “Our Thinking Controls How We Act”, 2) “Paying Attention to our Thinking”, 3) “Recognizing the Thinking that Leads us Into Trouble”, 4) “Finding New Thinking”, and 5) Using Thinking Check-ins”. The program teaches offenders how to change their behavior by changing their cognitions. The program meets five times over a 2-week period for 90-minute groups.

**Booster Sessions.** The booster sessions have been developed by Oriana House, Inc. staff from the Thinking for a Change curriculum. The sessions were developed to provide continuous practice and reinforcement of the skills learned in the Thinking for a Change and Thinking Errors programs. Offenders practice applying the concepts they have learned to everyday situations. Booster sessions are provided weekly and meet for 90 minutes. All moderate- and high-risk offenders attend cognitive-behavioral booster sessions upon completion of the Thinking for a Change and Thinking Errors programs, and will continue to attend booster sessions weekly until discharged from the program. Moderate-risk offenders will attend approximately four or more booster sessions and high-risk offenders will attend approximately six or more booster sessions.
Cognitive-behavioral Program Referral Process. Offenders sentenced to a CBCF are referred to cognitive-behavioral programming based on LSI-R score. As shown in Table 1, male and female offenders sentenced to the Summit County CBCF with LSI-R scores in the low risk/need range (14-23 and 10-19, respectively) are referred to the “Cognitive Self-change” program. Because the Seneca County CBCF has so few low risk/need offenders, Cognitive Self-change is not offered. Moderate risk/need offenders sentenced to the Summit County CBCF with LSI-R scores ranging from 30-33 for males and 20-30 for females are referred to the “Moderate Thinking Errors” program. Again, because so few clients at the Seneca County CBCF are in the moderate range, the Moderate Thinking Errors program is not offered.

For both facilities, all high risk/need offenders participate in the “High-risk Thinking Errors” program. This includes males with LSI-R scores of 34 or higher and females with LSI-R scores of 31 or higher. Offenders with LSI-R scores between 24-33 (males) and 20-30 (females) are referred to the “Moderate Thinking for a Change” program in both facilities, and offenders with LSI-R scores greater than 33 (males) and 30 (females) are referred to the “High-risk Thinking for a Change” program. Cognitive-behavioral “Moderate Booster” classes are required of Summit County CBCF male offenders with LSI-R scores between 24 and 33. Seneca County CBCF male offenders with LSI-R scores greater than 24 and female offenders with scores greater than 30 are required to participate in the moderate booster cognitive-behavioral classes. The “High-risk Booster” classes are required of Summit County male and female offenders with LSI-R scores greater than 33 and 30, respectively.
Table 3.1 Referral to Cognitive-Behavioral Program Based on LSI-R Score.

<table>
<thead>
<tr>
<th>Curriculum</th>
<th>Risk Level</th>
<th>LSI Score – Summit Co.</th>
<th></th>
<th>LSI Score – Seneca Co.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Cognitive Self-change</td>
<td>Low</td>
<td>14-23</td>
<td>10-19</td>
<td>n/a</td>
</tr>
<tr>
<td>Thinking Errors</td>
<td>Moderate</td>
<td>30-33</td>
<td>20-30</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>34+</td>
<td>31+</td>
<td>34+</td>
</tr>
<tr>
<td>Thinking for a Change</td>
<td>Moderate</td>
<td>24-33</td>
<td>20-30</td>
<td>24-33</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>34+</td>
<td>31+</td>
<td>34+</td>
</tr>
<tr>
<td>Boosters</td>
<td>Moderate</td>
<td>24-33</td>
<td>n/a</td>
<td>24+</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>34+</td>
<td>31+</td>
<td></td>
</tr>
</tbody>
</table>

As shown in Table 2, per the Principles of Effective Intervention (Andrews & Bonta, 2007), high-risk offenders are required to participate in more cognitive-behavioral programming as compared to moderate- or low-risk offenders. Further, also in accordance with the Principles of Effective Intervention, higher-risk offenders typically receive longer sentences to the CBCF facility (see Table 3). As such, higher-risk offenders have more time to participate in programming.

During the first week of residency in the CBCF facility, the offender participates in orientation group and meets with program staff to complete assessments and be screened for risk/need. If moderate- or high-risk, the offender will begin participation in the Thinking Errors program during the second week. For high-risk offenders, the Thinking for a Change program overlaps the Thinking Errors program and typically begins at week seven. For moderate-risk offenders, the Thinking for a Change program begins during week three and overlaps the Thinking Errors program. Booster sessions begin at week fourteen for high-risk offenders upon conclusion of the Thinking for a Change program. Moderate-risk offenders begin booster sessions at week twelve following completion of the Thinking for a Change program. Low-risk offenders begin the Cognitive Self-change intervention during week three and conclude around week five.
Table 3.2 Cognitive-behavioral Programming Progression by Offender Risk Level.

<table>
<thead>
<tr>
<th>Week 1</th>
<th>High Risk</th>
<th>Moderate Risk</th>
<th>Low Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 2</td>
<td>TE</td>
<td>TE</td>
<td></td>
</tr>
<tr>
<td>Week 3</td>
<td>TE</td>
<td>TE</td>
<td>T4C</td>
</tr>
<tr>
<td>Week 4</td>
<td>TE</td>
<td>TE</td>
<td>T4C</td>
</tr>
<tr>
<td>Week 5</td>
<td>TE</td>
<td>TE</td>
<td>T4C</td>
</tr>
<tr>
<td>Week 6</td>
<td>TE</td>
<td>TE</td>
<td>T4C</td>
</tr>
<tr>
<td>Week 7</td>
<td>TE</td>
<td>T4C</td>
<td>T4C</td>
</tr>
<tr>
<td>Week 8</td>
<td>TE</td>
<td>T4C</td>
<td>T4C</td>
</tr>
<tr>
<td>Week 9</td>
<td>TE</td>
<td>T4C</td>
<td>T4C</td>
</tr>
<tr>
<td>Week 10</td>
<td>T4C</td>
<td>T4C</td>
<td>T4C</td>
</tr>
<tr>
<td>Week 11</td>
<td>T4C</td>
<td></td>
<td>T4C</td>
</tr>
<tr>
<td>Week 12</td>
<td>T4C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 13</td>
<td>T4C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 14</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 15</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 16</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 17</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 18</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 19</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: TE=Thinking Errors; T4C=Thinking for a Change; B=Booster Session; CSC=Cognitive Self-change; Booster sessions continue until discharged from CBCF.

Table 3.3 Recommended Length of Stay in CBCF Based on Offender Risk Level.

<table>
<thead>
<tr>
<th>LSI-R Risk Level</th>
<th>Minimum Days</th>
<th>Maximum Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>Low/Moderate</td>
<td>61</td>
<td>108</td>
</tr>
<tr>
<td>Moderate</td>
<td>109</td>
<td>132</td>
</tr>
<tr>
<td>Moderate/High</td>
<td>133</td>
<td>161</td>
</tr>
<tr>
<td>High</td>
<td>162</td>
<td>180</td>
</tr>
</tbody>
</table>

Data Collection Procedure

All offenders receiving services from Oriana House, Inc. are referred to Oriana House, Inc. by the criminal justice system (e.g., judge, prosecutor, probation, parole).

Upon referral to a particular program or facility, offenders are interviewed and screened.
by an Intake Specialist to assess appropriateness of the referral and collect information that will guide treatment service referrals. Intake Specialists conduct intake interviews via phone or in person. During the intake interview the Intake Specialist will record basic demographic information from the offender and submit the information to the CMIS database. The Intake Specialist also administers the LSI-R to each offender referred to the CBCF program and enters that data into the CMIS database. Upon conclusion of the intake interview, the offender is scheduled to report to the CBCF for intake to the facility.

Upon intake to the CBCF facility the offender meets with a Resident Supervisor to complete an Intake Packet that includes documentation regarding the rules and policies that must be followed while residing in the facility. The offender is then referred to the medical staff for a medical assessment. Within three days from intake to the facility the offender will meet with his or her caseworker. The caseworker will explain the expectations for the client while participating in the CBCF programming. The caseworker will also explain to the offender the specific programming and meeting times of programming to which the offender has been referred. As noted above, based on LSI-R score the offender will be referred to cognitive-behavioral programming typically starting during the second week after intake to the facility. After meeting with the caseworker, but within three days of intake to the facility, the offender will be assessed for mental health, chemical dependency, employment and education issues. As the offender progresses through the CBCF program, the caseworker will make additional internal and external referrals as necessary.

An orientation meeting is held weekly at each CBCF facility. All new intakes to the facility are required to attend the orientation meeting. During the meeting the
offenders meet with the CBCF supervisor and the rules and policies of the facility are reiterated. The PICTS pre-test assessment is administered during the orientation meeting and prior to participation in any cognitive-behavioral programming. Upon completion of all cognitive-behavioral programming and during the last week of residency at the CBCF, the PICTS post-test assessment is administered.

All data collected via the PICTS assessment is collected using a scannable form in which the offender completes “bubbles” that correspond to the appropriate response choice. The PICTS assessments are collected weekly and sent to the Oriana House, Inc. Research Department where the forms are scanned into a database and checked for accuracy using Remark© optical mark recognition software by Gravic, Inc.©. The database is then converted to SPSS© format. All data are maintained on Oriana House, Inc. network servers that are secured and backed-up twice daily.

**Database Construction.** Construction of the dataset used for the current study was managed by the Oriana House, Inc. Research Department. The PICTS pre-test database was merged with the PICTS post-test database using client social security number. Cases in which a social security number match was not found were matched using client name. A request was made to the Management Information Systems department to pull the CMIS data on each offender referred to one of the four CBCF programs between August 2008 and March 2010 (when PICTS data was collected). The CMIS database was merged to the PICTS database using client social security number. Again, cases in which a social security number match was not found were matched using client name. All identifying information and variables not required for the proposed analyses were stripped from the final database before being provided for the study.
Data Analysis

Univariate analyses were conducted to describe the sample in terms of demographic characteristics and assessment scores (e.g., LSI-R and PICTS). To answer research questions one and two, analyses of co-variance (ANCOVA) were performed with gender (male/female) and race (minority/non-minority) as the grouping variables (independent) and the PICTS thinking error scale scores as the outcome/criterion measures. Covariates of location of treatment and offender risk level (LSI-R score) were included in each ANCOVA model to control for variation in treatment implementation across sites and individual risk for criminality. With regard to research question one (RQ1), an ANCOVA was conducted to examine gender (male/female) differences in PICTS thinking style scale scores pre cognitive-behavioral intervention and again post cognitive-behavioral intervention controlling for treatment location and offender risk level (LSI-R score). A third, repeated measures ANCOVA was performed to assess gender (male/female) differences with regard to cognitive change among the eight PICTS thinking error scale scores from pretest to posttest (i.e., the interaction of gender X time).

An ANCOVA was performed to examine research question two (RQ2). The ANCOVA examined differences in thinking error scale scores by offender race (minority/non-minority) pre cognitive-behavioral intervention and again post cognitive-behavioral intervention with treatment location and offender risk level (LSI-R score) included as covariates. A repeated measures ANCOVA was performed to examine differences by race (minority/non-minority) in terms of cognitive change among the eight PICTS thinking error scale scores (i.e., race X time interaction).
The third research question (RQ3) was addressed by performing a binary logistic regression using discharge status (successful/unsuccessful) as the dependent variable and PICTS thinking error scale scores as the independent variables.
CHAPTER IV

ANALYSIS OF THE DATA

The following chapter describes the analyses conducted to answer the research questions proposed for this study. Four main sections comprise the chapter: 1) demographic information on the two population samples used for the analyses, 2) univariate analysis of co-variance (ANCOVA) to analyze gender and race differences prior to and following cognitive-behavioral (CBT) intervention, 3) repeated measures analysis of co-variance (ANCOVA) to analyze differences in change from pre to post CBT intervention according to gender and race, and 4) binary logistic regression analysis to examine the usefulness of thinking error scale scores as a predictor of program success.

Purpose

The purpose of the study was to examine the feasibility of using thinking error scale scores to evaluate CBT intervention effectiveness. Further, the issue of responsivity was examined by assessing differences in terms of offender gender and race with regard to thinking error scale scores derived from the Psychological Inventory of Criminal Thinking Styles (PICTS). Specifically, male and female offenders were compared using univariate ANCOVA to discern differences in PICTS thinking error scores prior to and
then again following involvement in a CBT intervention. Likewise, Caucasian and African-American offenders were compared to assess differences in thinking error scores pre and post CBT intervention. A repeated measures ANCOVA was conducted to discern differences between genders and races with regard to the degree of change in thinking error scores after completion of the CBT intervention. Finally, a regression analysis was conducted to examine the ability of the thinking error scores to predict offenders who fail to complete the CBCF program (e.g., unsuccessful clients).

The importance of examining the feasibility of using thinking error scores to measure CBT intervention effectiveness is that in comparison to recidivism data, thinking error scores are more readily available and easier to obtain. In addition, thinking error scores require far less resources—both financial and staff—to obtain. If the use of thinking error scores is a feasible way of measuring CBT intervention effectiveness it would provide to criminal justice agencies an alternative means of evaluation that is more viable than the use of recidivism data. With regard to the issue of responsivity, it is important to identify differences in terms of gender and race that may impede an offender’s ability to learn the information presented while enrolled in a CBT intervention. Knowing gender or race differences could inform programming and allow for modifications to the CBT curriculum that better meet the needs of the offender based on gender and race. Finally, if thinking error scores can accurately predict which offenders are at higher risk of failing to complete the CBCF program, that information can be used to identify “at-risk” offenders and allow staff to target those particular thinking errors in an effort to reduce the likelihood of failure. In summary, the findings of this study could
assist in making programming more tailored to each offender and thus more effective and efficient for offenders.

**Demographic Information for ANCOVA Analyses**

Two samples were used to conduct the analyses for the study. The first sample, consisting of 527 offenders, was used to conduct the ANCOVA analyses. All 527 cases were considered in the analyses because each had completed both the pre- and post-test of the PICTS thinking errors assessment. A small number of offenders (28) in this sample failed to successfully complete the CBCF programming. However, because the PICTS was collected from these 28 offenders, completion of the CBT intervention would have occurred. Comparisons by gender and race were possible prior to and following CBT intervention. Gender and race were also possible to examine across time by comparing changes in thinking error scores from the pre-test to the post-test. The sample consisted of 93 (17.6%) females and was comprised of 208 (39.5%) African-American offenders (Table 4.1). The majority of offenders were single (75.5%) and more than half (58.7%) had completed high school or earned a GED. In terms of the type of criminal offense that lead to residency in the CBCF facility, most had committed a drug offense (40.4%), 21.4 percent committed a property or fraud offense, 17.8 percent committed a personal offense, 3.5 percent committed a traffic offense and 16.9 percent committed some other offense type. Nearly 70 percent (67.9%) of offenders had participated in the Akron CBCF program. The average age of offenders was 31.93 years. In terms of risk/need, the average Level of Service Inventory-Revised (LSI-R) score was 29.9. The average number of days served in the CBCF program was 129.3.
The second sample consisted of 926 offenders and included the 527 cases from the first sample. All offenders included in this sample had completed either the PICTS pre-test only or the PICTS pre- and post-test. The second sample was used to conduct the regression analysis to predict unsuccessful completion of the CBCF program. Because the intent of the analysis was to predict unsuccessful completion of the CBCF program, it was only necessary to include offenders who had completed the pre-test PICTS assessment. It was not necessary to include only offenders who had completed both the

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>434</td>
<td>82.4</td>
</tr>
<tr>
<td>Female</td>
<td>93</td>
<td>17.6</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>398</td>
<td>75.5</td>
</tr>
<tr>
<td>Married</td>
<td>57</td>
<td>10.8</td>
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<tr>
<td>Divorced/Separated</td>
<td>72</td>
<td>13.7</td>
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<tr>
<td><strong>Race</strong></td>
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<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>319</td>
<td>60.5</td>
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<tr>
<td>African American</td>
<td>208</td>
<td>39.5</td>
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<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No HS Degree</td>
<td>216</td>
<td>41.3</td>
</tr>
<tr>
<td>HS/GED</td>
<td>307</td>
<td>58.7</td>
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<td><strong>Offense Type</strong></td>
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<td></td>
</tr>
<tr>
<td>Property/Fraud</td>
<td>105</td>
<td>21.4</td>
</tr>
<tr>
<td>Person</td>
<td>87</td>
<td>17.8</td>
</tr>
<tr>
<td>Drug</td>
<td>198</td>
<td>40.4</td>
</tr>
<tr>
<td>Traffic</td>
<td>17</td>
<td>3.5</td>
</tr>
<tr>
<td>Other</td>
<td>83</td>
<td>16.9</td>
</tr>
<tr>
<td><strong>Site</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akron</td>
<td>358</td>
<td>67.9</td>
</tr>
<tr>
<td>Tiffin</td>
<td>169</td>
<td>32.1</td>
</tr>
<tr>
<td><strong>Age (x̄, s.d.)</strong></td>
<td>31.93</td>
<td>(10.00)</td>
</tr>
<tr>
<td><strong>LSI-R Score (x̄, s.d.)</strong></td>
<td>29.93</td>
<td>(5.77)</td>
</tr>
<tr>
<td><strong>Days Completed (x̄, s.d.)</strong></td>
<td>129.29</td>
<td>(35.50)</td>
</tr>
</tbody>
</table>
pre- and post-test PICTS assessment. To provide enough cases with an “unsuccessful” completion status, it was necessary to include offenders who did not complete the post-test PICTS assessment. It should be noted that 212 cases unique to the second sample did complete the CBT intervention, but were excluded from the repeated ANCOVA analyses because a post-test PICTS assessment was not available for comparison. This sample of 212 offenders had a larger percentage of females, was approximately 2 years older, had completed more years of education and had completed approximately 18 more days in the CBCF program. Given the demographics of these 212 cases, inclusion in the repeated measures ANCOVA analyses may have resulted in lower levels of thinking error at post-test, especially since offenders who are less likely to recidivate are female, older, and more educated (see, for example, Gendreau, Little, & Goggin, 1996). The reason for not completing the post-test PICTS assessment was likely due to negligence on the part of the CBCF staff responsible for administering the assessment.

**Univariate Analysis of Co-Variance**

Differences in pre-test PICTS thinking error scores were analyzed using a univariate analysis of co-variance procedure (ANCOVA). Differences were examined according to race and gender. Thinking error was entered into the analyses as the dependent variable, gender and age were entered individually as independent variables and LSI-R score, number of days completed in the CBCF program, and facility (Akron or Tiffin) were entered as covariates. Table 4.2 shows the breakdown of LSI-R composite and subscale scores for each of the demographic variables (e.g., gender, race, marital status).
Table 4.2 Level of Service Inventory-Revised (LSI-R) scores for offenders completing both the pre-test and post-test PICTS assessment.

<table>
<thead>
<tr>
<th>Facility</th>
<th>COM</th>
<th>ACC</th>
<th>AoD</th>
<th>AO</th>
<th>CH</th>
<th>Com</th>
<th>EE</th>
<th>EP</th>
<th>Fin</th>
<th>FM</th>
<th>Lei</th>
<th>Sch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akron</td>
<td>29.01 (5.74)</td>
<td>0.90 (0.94)</td>
<td>5.96 (2.00)</td>
<td>1.44 (1.12)</td>
<td>5.54 (2.10)</td>
<td>2.72 (1.12)</td>
<td>2.33 (1.02)</td>
<td>1.03 (1.18)</td>
<td>1.10 (0.44)</td>
<td>1.15 (0.44)</td>
<td>1.97 (0.54)</td>
<td>1.78 (0.54)</td>
</tr>
<tr>
<td>Tiffin</td>
<td>32.05 (5.25)</td>
<td>0.89 (0.91)</td>
<td>5.78 (0.81)</td>
<td>1.70 (1.70)</td>
<td>5.36 (1.90)</td>
<td>2.68 (1.10)</td>
<td>2.15 (1.10)</td>
<td>1.51 (1.10)</td>
<td>1.47 (1.10)</td>
<td>1.24 (1.10)</td>
<td>1.86 (0.39)</td>
<td>1.48 (0.96)</td>
</tr>
</tbody>
</table>

Note: COM = composite score; ACC = accommodation; AoD = alcohol and drugs; AO = attitudes and orientation; CH = criminal history; Com = companions; EE = education and employment; EP = emotional and personal; Fin = financial; FM = family and marital; Lei = leisure; Sch = school; Education subscale not separated from Employment & Education subscale. Higher scores indicate higher levels of risk/need.
Prior to the analyses, normality of the dependent variables (e.g., thinking errors scale scores, pre and post) were examined using the “explore” function in SPSS® 16.0. A range of -1.0 to 1.0 is generally considered an acceptable range for skewness values, with some experts reporting -2.0 to 2.0 as an acceptable range (Miles & Shevlin, 2001). Dependent variables with a skewness value outside the +/-1.0 range were examined for outliers. Outliers for each variable were determined using the “examine” procedure in SPSS® 16.0 to compute Tukey’s Hinges (values at the 25th and 75th percentile). Using the Tukey Hinge values a range was computed to yield the lower and upper bound for outliers. Values outside the lower or upper bound range were deleted from the database.

Shown in Table 4.3, there were decreases in all thinking error scores for the sample except the superoptimism thinking error, which increased slightly from pre to post CBT intervention. Table 4.4 shows that differences between Caucasian and African-American offenders on pre-test PICTS thinking error scores were mixed. African-American offenders reported higher levels of mollification (18.21 vs. 17.45), power orientation (15.12 vs. 14.73) and sentimentality (18.48 vs. 17.76) thinking errors as compared to Caucasian offenders. However, only the difference on the sentimentality thinking error scale was statistically significant (F = 5.13, p = .024).

Table 4.3 Thinking error scale scores for total sample pre and post CBT intervention.

<table>
<thead>
<tr>
<th>Thinking Error</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mollification</td>
<td>17.75 (5.15)</td>
<td>15.35 (5.68)</td>
</tr>
<tr>
<td>Cutoff</td>
<td>15.67 (3.76)</td>
<td>14.48 (4.17)</td>
</tr>
<tr>
<td>Entitlement</td>
<td>14.08 (3.09)</td>
<td>13.52 (3.33)</td>
</tr>
<tr>
<td>Power Orientation</td>
<td>14.88 (3.65)</td>
<td>13.44 (3.90)</td>
</tr>
<tr>
<td>Sentimentality</td>
<td>18.04 (3.29)</td>
<td>16.61 (3.59)</td>
</tr>
<tr>
<td>Superoptimism</td>
<td>13.99 (3.06)</td>
<td>14.54 (3.49)</td>
</tr>
<tr>
<td>Cognitive Indolence</td>
<td>16.42 (4.36)</td>
<td>14.32 (3.98)</td>
</tr>
<tr>
<td>Discontinuity</td>
<td>16.08 (4.59)</td>
<td>14.39 (3.80)</td>
</tr>
<tr>
<td>n = 527</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Caucasian offenders indicated higher levels of the cutoff (15.99 vs. 15.17), entitlement (14.17 vs. 13.95), superoptimism (14.30 vs. 13.53), cognitive indolence (16.74 vs. 15.92) and discontinuity (16.67 vs. 15.17) thinking errors. The higher levels of cutoff ($F = 3.99$, $p = .046$) and discontinuity ($F = 8.28$, $p = .004$) thinking error among Caucasians were statistically significant. It should be noted that while differences based on race were not statistically significant for several of the thinking error scales, many had $p$-values close to significance (e.g., mollification, superoptimism). If power for these comparisons had been greater, it is likely that the differences would have been found to be significant.

Table 4.4 Results of Univariate ANCOVA Examining Differences in Thinking Error Scores by Race Prior to CBT Intervention.

<table>
<thead>
<tr>
<th>Race</th>
<th>Model</th>
<th>Main Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Caucasian</td>
<td>African American</td>
</tr>
<tr>
<td></td>
<td>mean (s.d.)</td>
<td>mean (s.d.)</td>
</tr>
<tr>
<td>Mollification</td>
<td>17.45 (5.21)</td>
<td>18.21 (5.03)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutoff</td>
<td>15.99 (3.81)</td>
<td>15.17 (3.63)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entitlement</td>
<td>14.17 (3.14)</td>
<td>13.95 (3.00)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Orientation</td>
<td>14.73 (3.67)</td>
<td>15.12 (3.62)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentimentality</td>
<td>17.76 (3.26)</td>
<td>18.48 (3.29)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superoptimism</td>
<td>14.30 (3.08)</td>
<td>13.53 (2.97)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Indol.</td>
<td>16.74 (4.35)</td>
<td>15.92 (4.33)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discontinuity</td>
<td>16.67 (4.62)</td>
<td>15.17 (4.40)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Caucasian $n = 319$; African American $n = 208$.

Differences in post-test PICTS scores according to race were also mixed (Table 4.5). Caucasian offenders reported higher levels of cutoff (14.62 vs. 14.25), superoptimism (14.77 vs. 14.18) and discontinuity (14.70 vs. 13.93) thinking error. African-American offenders reported higher levels of mollification (15.70 vs. 15.13), entitlement (13.68 vs. 13.41), power orientation (13.98 vs. 13.08), sentimentality (16.99 vs. 16.37), and cognitive indolence (14.52 vs. 14.19). The differences in thinking error levels were statistically significant only for the discontinuity ($F = 7.16$, $p = .008$) scale.
The difference between Caucasian and African American scores on the discontinuity thinking error scale remained at both the pre- and post-test PICTS assessment.

Shown in Table 4.6, results of the univariate ANCOVA to assess differences in pre-test PICTS thinking error scores by gender showed that males reported significantly higher levels of the mollification thinking error (17.93 vs. 16.90; F = 4.71, p = .030). Although not statistically significant, males also report higher levels of the entitlement (14.13 vs. 13.87), power orientation (14.97 vs. 14.46) and sentimentality (18.09 vs. 17.81) thinking errors. Females reported higher levels of the cutoff (16.54 vs. 15.48), superoptimism (14.26 vs. 13.94), cognitive indolence (16.49 vs. 16.40) and discontinuity (17.13 vs. 15.86) thinking errors. However, none were statistically significant.

### Table 4.5 Results of Univariate ANCOVA Examining Differences in Thinking Error Scores by Race Following CBT Intervention.

<table>
<thead>
<tr>
<th>Race</th>
<th>Model</th>
<th>Main Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Caucasian mean (s.d.)</td>
</tr>
<tr>
<td>Mollification</td>
<td></td>
<td>15.13 (5.81)</td>
</tr>
<tr>
<td>Cutoff</td>
<td></td>
<td>14.62 (4.00)</td>
</tr>
<tr>
<td>Entitlement</td>
<td></td>
<td>13.41 (3.19)</td>
</tr>
<tr>
<td>Power Orientation</td>
<td></td>
<td>13.08 (3.62)</td>
</tr>
<tr>
<td>Sentimentality</td>
<td></td>
<td>16.37 (3.37)</td>
</tr>
<tr>
<td>Superoptimism</td>
<td></td>
<td>14.77 (3.42)</td>
</tr>
<tr>
<td>Cognitive Indol.</td>
<td></td>
<td>14.19 (3.66)</td>
</tr>
<tr>
<td>Discontinuity</td>
<td></td>
<td>14.70 (3.52)</td>
</tr>
</tbody>
</table>

Caucasian n = 319; African American n = 208.
Table 4.6 Results of Univariate ANCOVA Examining Differences in Thinking Error Scores by Gender Prior to CBT Intervention.

<table>
<thead>
<tr>
<th></th>
<th>Gender</th>
<th>Model</th>
<th>Main Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male mean (s.d.)</td>
<td>Female mean (s.d.)</td>
<td>F</td>
</tr>
<tr>
<td>Mollification</td>
<td>17.93 (5.04)</td>
<td>16.90 (5.60)</td>
<td>5.41</td>
</tr>
<tr>
<td>Cutoff</td>
<td>15.48 (3.63)</td>
<td>16.54 (4.24)</td>
<td>6.31</td>
</tr>
<tr>
<td>Entitlement</td>
<td>14.13 (3.09)</td>
<td>13.87 (3.08)</td>
<td>3.96</td>
</tr>
<tr>
<td>Power Orientation</td>
<td>14.97 (3.56)</td>
<td>14.46 (4.04)</td>
<td>4.33</td>
</tr>
<tr>
<td>Sentimentality</td>
<td>18.09 (3.26)</td>
<td>17.81 (3.40)</td>
<td>3.14</td>
</tr>
<tr>
<td>Superoptimism</td>
<td>13.94 (3.08)</td>
<td>14.26 (2.93)</td>
<td>4.05</td>
</tr>
<tr>
<td>Cognitive Indol.</td>
<td>16.40 (4.27)</td>
<td>16.49 (4.77)</td>
<td>3.73</td>
</tr>
<tr>
<td>Discontinuity</td>
<td>15.86 (4.45)</td>
<td>17.13 (5.12)</td>
<td>9.06</td>
</tr>
</tbody>
</table>

Caucasian n = 319; African American n = 208.

Males reported higher levels of thinking error with regard to post-test PICTS thinking error scores in six of the eight scales (Table 4.7). The mollification (15.68 vs. 13.83), cutoff (14.55 vs. 14.13), entitlement (13.57 vs. 13.26), power orientation (13.72 vs. 12.18), sentimentality (16.85 vs. 15.51) and cognitive indolence (14.37 vs. 14.10) scales were all higher for male offenders as compared to female offenders. Female offenders indicated higher levels of superoptimism (14.90 vs. 14.46) and discontinuity (14.61 vs. 14.35) thinking error. However, only the differences on the mollification (F = 6.08, p = .014), power orientation (F = 6.97, p = .009) and sentimentality (F = 7.32, p = .007) scales were statistically significant. The statistically significant difference between male and female scores on the mollification scale was evident at both the pre- and post-test PICTS assessment.
Repeated Measures Analysis of Variance (ANCOVA)

Repeated measures ANCOVAs were conducted to analyze differences in the amount of change in PICTS thinking error scores as measured prior to and then again following involvement in the CBT intervention. Differences in the amount of change were examined by race and gender. The thinking error scale scores were entered as the dependent variables in the analyses. Gender and race were entered as the independent variables and LSI-R score, days completed and facility were entered as covariates.

Table 4.8 displays the results of the repeated measures ANCOVA examining differences in the amount of change of thinking error scores over time according to race. Figures 4.1 through 4.8 show the plots of the means for each thinking error scale by race. The analysis revealed no statistically significant differences in the degree of change over time between African-American and Caucasian offenders. With the exception of the superoptimism thinking error scale, the scores for the thinking error scales decreased for both races following participation in the CBT intervention. The superoptimism thinking error scores increased slightly following CBT intervention.
Table 4.8 Results of Repeated Measures ANCOVA Examining Differences in Degree of Change from Pre to Post CBT Intervention by Offender Race.

<table>
<thead>
<tr>
<th>Thinking Error</th>
<th>Caucasian Pre mean (s.d.)</th>
<th>Caucasian Post mean (s.d.)</th>
<th>F</th>
<th>p-value</th>
<th>Partial Eta-squared</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mollification (Mo)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>17.45 (5.21)</td>
<td>15.13 (5.81)</td>
<td>.968</td>
<td>.326</td>
<td>.002</td>
<td>.166</td>
</tr>
<tr>
<td>African American</td>
<td>18.21 (5.03)</td>
<td>15.70 (5.47)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutoff (Co)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>15.99 (3.81)</td>
<td>14.62 (4.00)</td>
<td>.058</td>
<td>.810</td>
<td>.000</td>
<td>.057</td>
</tr>
<tr>
<td>African American</td>
<td>15.17 (3.63)</td>
<td>14.25 (4.42)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entitlement (En)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>14.18 (3.14)</td>
<td>13.41 (3.19)</td>
<td>.410</td>
<td>.522</td>
<td>.001</td>
<td>.098</td>
</tr>
<tr>
<td>African American</td>
<td>13.92 (2.97)</td>
<td>13.65 (3.53)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Orientation (Po)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>14.71 (3.64)</td>
<td>13.08 (3.62)</td>
<td>.064</td>
<td>.801</td>
<td>.000</td>
<td>.057</td>
</tr>
<tr>
<td>African American</td>
<td>15.10 (3.62)</td>
<td>13.98 (4.23)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentimentality (Sn)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>17.76 (3.26)</td>
<td>16.37 (3.37)</td>
<td>1.25</td>
<td>.264</td>
<td>.002</td>
<td>.201</td>
</tr>
<tr>
<td>African American</td>
<td>18.48 (3.29)</td>
<td>16.99 (3.88)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superoptimism (So)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>14.24 (3.05)</td>
<td>14.73 (3.39)</td>
<td>.463</td>
<td>.496</td>
<td>.001</td>
<td>.104</td>
</tr>
<tr>
<td>African American</td>
<td>13.53 (2.97)</td>
<td>14.15 (3.56)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Indolence (Ci)</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>16.70 (4.32)</td>
<td>14.19 (3.66)</td>
<td>1.40</td>
<td>.237</td>
<td>.003</td>
<td>.219</td>
</tr>
<tr>
<td>African American</td>
<td>15.96 (4.34)</td>
<td>14.52 (4.44)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discontinuity (Ds)</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>16.56 (4.55)</td>
<td>14.70 (3.52)</td>
<td>.115</td>
<td>.735</td>
<td>.000</td>
<td>.063</td>
</tr>
<tr>
<td>African American</td>
<td>15.13 (4.35)</td>
<td>13.93 (4.15)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Shown in Table 4.9, Caucasian offenders had the greatest amount of change in thinking error from pre to post CBT intervention for the majority of thinking errors. African-American offenders exhibited the greatest degree of change for the mollification, sentimenterality and superoptimism thinking error scales.
Table 4.9 Pre and Post Thinking Error Scores and Amount of Change Following CBT Intervention by Race.

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mollification</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>17.45</td>
<td>15.13</td>
<td>-2.32</td>
</tr>
<tr>
<td>African American</td>
<td>18.21</td>
<td>15.70</td>
<td>-2.51</td>
</tr>
<tr>
<td><strong>Cutoff</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>15.99</td>
<td>14.62</td>
<td>-1.37</td>
</tr>
<tr>
<td>African American</td>
<td>15.17</td>
<td>14.25</td>
<td>-0.92</td>
</tr>
<tr>
<td><strong>Entitlement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>14.18</td>
<td>13.41</td>
<td>-0.77</td>
</tr>
<tr>
<td>African American</td>
<td>13.92</td>
<td>13.65</td>
<td>-0.27</td>
</tr>
<tr>
<td><strong>Power Orientation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>14.71</td>
<td>13.08</td>
<td>-1.63</td>
</tr>
<tr>
<td>African American</td>
<td>15.10</td>
<td>13.98</td>
<td>-1.12</td>
</tr>
<tr>
<td><strong>Sentimentality</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>17.76</td>
<td>16.37</td>
<td>-1.39</td>
</tr>
<tr>
<td>African American</td>
<td>18.48</td>
<td>16.99</td>
<td>-1.49</td>
</tr>
<tr>
<td><strong>Superoptimism</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>14.24</td>
<td>14.73</td>
<td>0.49</td>
</tr>
<tr>
<td>African American</td>
<td>13.53</td>
<td>14.15</td>
<td>0.62</td>
</tr>
<tr>
<td><strong>Cognitive Indolence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>16.70</td>
<td>14.19</td>
<td>-2.51</td>
</tr>
<tr>
<td>African American</td>
<td>15.96</td>
<td>14.52</td>
<td>-1.44</td>
</tr>
<tr>
<td><strong>Discontinuity</strong></td>
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<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>16.56</td>
<td>14.70</td>
<td>-1.86</td>
</tr>
<tr>
<td>African American</td>
<td>15.13</td>
<td>13.93</td>
<td>-1.20</td>
</tr>
</tbody>
</table>
Figure 4.1 Estimated marginal means for change in mollification scale scores following CBT intervention by race.
Figure 4.2 Estimated marginal means for change in cutoff scale scores following CBT intervention by race.
Figure 4.3 Estimated marginal means for change in entitlement scale scores following CBT intervention by race.
Figure 4.4 Estimated marginal means for change in power orientation scale scores following CBT intervention by race.
Figure 4.5 Estimated marginal means for change in sentimentality scale scores following CBT intervention by race.
Figure 4.6 Estimated marginal means for change in superoptimism scale scores following CBT intervention by race.
Figure 4.7 Estimated marginal means for change in cognitive indolence scale scores following CBT intervention by race.
The repeated measures ANCOVA examining differences in the degree of change in thinking error between male and female offenders is shown in Table 4.10; Figures 4.9 through 4.16 display the plots of the means for each thinking error scale by gender. There was a statistically significance difference between male and female offenders in the amount of change from pre to post CBT intervention for the cutoff (F = 5.78, p = .017; Figure 4.10) thinking error score. There was a 2.41 point decrease in the cutoff thinking error score.
error score for female offenders, while cutoff scores for male offenders decreased only .93 points (see Table 4.11). Once again, scores for all of the thinking error scales decreased over time with the exception of the superoptimism thinking error score.

Superoptimism scores increased .53 and .63 for male and female offenders, respectively.

Table 4.10 Results of Repeated Measures ANCOVA Examining Differences in Degree of Change from Pre to Post CBT Intervention by Offender Gender.

<table>
<thead>
<tr>
<th></th>
<th>Pre mean (s.d.)</th>
<th>Post mean (s.d.)</th>
<th>F</th>
<th>p-value</th>
<th>Partial Eta-squared</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mollification (Mo)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>17.93 (5.04)</td>
<td>15.68 (5.66)</td>
<td>.269</td>
<td>.604</td>
<td>.001</td>
<td>.081</td>
</tr>
<tr>
<td>Female</td>
<td>16.90 (5.60)</td>
<td>13.83 (5.57)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutoff (Co)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15.48 (3.63)</td>
<td>14.55 (4.16)</td>
<td>5.78</td>
<td>.017</td>
<td>.011</td>
<td>.670</td>
</tr>
<tr>
<td>Female</td>
<td>16.54 (4.24)</td>
<td>14.13 (4.24)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entitlement (En)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>14.12 (3.08)</td>
<td>13.57 (3.32)</td>
<td>.457</td>
<td>.499</td>
<td>.001</td>
<td>.104</td>
</tr>
<tr>
<td>Female</td>
<td>13.87 (3.08)</td>
<td>13.19 (3.35)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Orientation (Po)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>14.95 (3.54)</td>
<td>13.71 (3.92)</td>
<td>1.55</td>
<td>.214</td>
<td>.003</td>
<td>.237</td>
</tr>
<tr>
<td>Female</td>
<td>14.46 (4.04)</td>
<td>12.18 (3.52)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentimentality (Sn)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>18.09 (3.26)</td>
<td>16.85 (3.56)</td>
<td>3.32</td>
<td>.069</td>
<td>.006</td>
<td>.444</td>
</tr>
<tr>
<td>Female</td>
<td>17.81 (3.40)</td>
<td>15.51 (3.54)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superoptimism (So)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13.92 (3.07)</td>
<td>14.45 (3.44)</td>
<td>.012</td>
<td>.914</td>
<td>.000</td>
<td>.051</td>
</tr>
<tr>
<td>Female</td>
<td>14.13 (2.89)</td>
<td>14.76 (3.61)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Indolence (Ci)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>16.39 (4.25)</td>
<td>14.37 (3.94)</td>
<td>.198</td>
<td>.656</td>
<td>.000</td>
<td>.073</td>
</tr>
<tr>
<td>Female</td>
<td>16.49 (4.77)</td>
<td>14.10 (4.21)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Discontinuity (Ds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15.74 (4.35)</td>
<td>14.35 (3.67)</td>
<td>1.98</td>
<td>.160</td>
<td>.004</td>
<td>.290</td>
</tr>
<tr>
<td>Female</td>
<td>17.13 (5.12)</td>
<td>14.61 (4.37)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.11 shows the amount of change in thinking error from pre to post CBT intervention for male and female offenders. In all cases female offenders had larger decreases or increases in thinking error than did male offenders.
Table 4.11 Pre and Post Thinking Error Scores and Amount of Change Following CBT Intervention by Gender.

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mollification</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>17.93</td>
<td>15.68</td>
<td>-2.25</td>
</tr>
<tr>
<td>Female</td>
<td>16.90</td>
<td>13.83</td>
<td>-3.07</td>
</tr>
<tr>
<td><strong>Cutoff</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15.48</td>
<td>14.55</td>
<td>-0.93</td>
</tr>
<tr>
<td>Female</td>
<td>16.54</td>
<td>14.13</td>
<td>-2.41</td>
</tr>
<tr>
<td><strong>Entitlement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>14.12</td>
<td>13.57</td>
<td>-0.55</td>
</tr>
<tr>
<td>Female</td>
<td>13.87</td>
<td>13.19</td>
<td>-0.68</td>
</tr>
<tr>
<td><strong>Power Orientation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>14.95</td>
<td>13.71</td>
<td>-1.24</td>
</tr>
<tr>
<td>Female</td>
<td>14.46</td>
<td>12.18</td>
<td>-2.28</td>
</tr>
<tr>
<td><strong>Sentimentality</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>18.09</td>
<td>16.85</td>
<td>-1.24</td>
</tr>
<tr>
<td>Female</td>
<td>17.81</td>
<td>15.51</td>
<td>-2.30</td>
</tr>
<tr>
<td><strong>Superoptimism</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13.92</td>
<td>14.45</td>
<td>0.53</td>
</tr>
<tr>
<td>Female</td>
<td>14.13</td>
<td>14.76</td>
<td>0.63</td>
</tr>
<tr>
<td><strong>Cognitive Indolence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>16.39</td>
<td>14.37</td>
<td>-2.02</td>
</tr>
<tr>
<td>Female</td>
<td>16.49</td>
<td>14.10</td>
<td>-2.39</td>
</tr>
<tr>
<td><strong>Discontinuity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15.74</td>
<td>14.35</td>
<td>-1.39</td>
</tr>
<tr>
<td>Female</td>
<td>17.13</td>
<td>14.61</td>
<td>-2.52</td>
</tr>
</tbody>
</table>
Figure 4.9 Estimated marginal means for change in mollification scale scores following CBT intervention by gender.
Figure 4.10 Estimated marginal means for change in cutoff scale scores following CBT intervention by gender.
Figure 4.11 Estimated marginal means for change in entitlement scale scores following CBT intervention by gender.
Figure 4.12 Estimated marginal means for change in power orientation scale scores following CBT intervention by gender.
Figure 4.13 Estimated marginal means for change in sentimentality scale scores following CBT intervention by gender.
Figure 4.14 Estimated marginal means for change in superoptimism scale scores following CBT intervention by gender.
Figure 4.15 Estimated marginal means for change in cognitive indolence scale scores following CBT intervention by gender.
Figure 4.16 Estimated marginal means for change in discontinuity scale scores following CBT intervention by gender.
Demographic Information for Binary Logistic Regression Analysis

The second sample of offenders, from which the binary logistic regression analysis was conducted, consisted of 926 cases. Noted previously, the second sample included offenders who participated in the CBCF programs, but who may not have completed the post-test PICTS assessment. In many cases, the post-test PICTS assessment data was not available because the offender had been terminated from the CBCF program prior to successful completion (e.g., terminated for noncompliance or leaving AWOL). Using the same procedure noted above for the ANCOVA analyses, normality was assessed for the thinking error scale scores. All thinking error variables were within the suggested +/-1.0 range.

Displayed in Table 4.12, the majority of offenders were male (79.6%) and Caucasian (61.2%). Most offenders were single (75.9%), nearly 60 percent had a high school degree or GED (59.5%), and most were sentenced to the CBCF program for committing a drug-related offense (38.4%). Slightly over 20 percent of offenders were sentenced to the CBCF program for property/fraud offenses (23.3%), 17.0 percent for personal offenses, 3.4 percent for traffic offenses and 18.0 percent for other offenses. The majority of offenders were sentenced to the CBCF program located in Akron (67.7%) and 216 (23.3%) of the offenders did not complete the CBCF program. (e.g., were terminated).
Table 4.12 Demographic Information for Offenders Completing the Pre Only or Pre and Post Measures of PICTS Assessment

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>737</td>
<td>79.6</td>
</tr>
<tr>
<td>Female</td>
<td>189</td>
<td>20.4</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
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<tr>
<td>Single</td>
<td>703</td>
<td>75.9</td>
</tr>
<tr>
<td>Married</td>
<td>102</td>
<td>11.0</td>
</tr>
<tr>
<td>Divorced/Separated</td>
<td>121</td>
<td>13.1</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>567</td>
<td>61.2</td>
</tr>
<tr>
<td>African American</td>
<td>359</td>
<td>38.8</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No HS Degree</td>
<td>369</td>
<td>40.4</td>
</tr>
<tr>
<td>HS/GED</td>
<td>544</td>
<td>59.5</td>
</tr>
<tr>
<td>Offense Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property/Fraud</td>
<td>201</td>
<td>23.3</td>
</tr>
<tr>
<td>Person</td>
<td>147</td>
<td>17.0</td>
</tr>
<tr>
<td>Drug</td>
<td>331</td>
<td>38.4</td>
</tr>
<tr>
<td>Traffic</td>
<td>29</td>
<td>3.4</td>
</tr>
<tr>
<td>Other</td>
<td>155</td>
<td>18.0</td>
</tr>
<tr>
<td>Site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akron</td>
<td>627</td>
<td>67.7</td>
</tr>
<tr>
<td>Tiffin</td>
<td>299</td>
<td>32.3</td>
</tr>
<tr>
<td>Program Status</td>
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<tr>
<td>Successful</td>
<td>710</td>
<td>76.7</td>
</tr>
<tr>
<td>Unsuccessful</td>
<td>216</td>
<td>23.3</td>
</tr>
<tr>
<td>Age (x̄, s.d.)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>30.97 (10.13)</td>
<td></td>
</tr>
<tr>
<td>LSI-R Score (x̄, s.d.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30.97 (5.90)</td>
<td></td>
</tr>
<tr>
<td>Days Completed (x̄, s.d.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>122.64 (41.32)</td>
<td></td>
</tr>
</tbody>
</table>

Binary Logistic Regression Analysis

A stepwise (forward likelihood ratio) binary logistic regression analysis was conducted to identify variables able to predict unsuccessful completion of the CBCF program (Table 4.13). The dependent variable was program completion status (successful
vs. unsuccessful). Independent variables included in the analysis were thinking error scale scores, gender and race. The thinking error scale scores were entered as continuous variables, and gender (male vs. female) and race (Caucasian vs. African American) were entered as dichotomous variables in the model. A Hosmer and Lemeshow goodness of fit test indicated that the model estimate was acceptable ($\chi^2 = 7.69$, $p = .464$). Results indicate that there is a 2.24 increase in the odds of being terminated from the program if the offender is male (odds ratio [OR] = 2.24, $p = .000$). With regard to thinking error scores, only the sentimentality and superoptimism thinking error scales were found to be significant predictors of program completion status. For each one-point increase in sentimentality thinking error there was a .948 log odds decrease in being terminated from the program before completion (OR = .948, $p = .027$). In other words, as sentimentality thinking error increased and an offender felt as if he or she was attempting to atone for past crimes through self-centered good deeds, the more likely he or she was to complete the CBCF program. Alternatively, for each one-point increment in superoptimism thinking error, the log odds of being terminated from the program increased by 1.13 (OR = 1.13, $p = .000$). Consequently, the more confidence that an offender felt that he or she would be able to avoid the negative consequences of criminal behaviors, the more likely he or she was to be terminated from the CBCF program.

Table 4.13 Results of Binary Logistic Regression Analysis

<table>
<thead>
<tr>
<th>Variables Included in the Model</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>p</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (male)</td>
<td>.807</td>
<td>.229</td>
<td>12.47</td>
<td>1</td>
<td>.000</td>
<td>2.24</td>
<td>1.43–3.51</td>
</tr>
<tr>
<td>Sentimentality</td>
<td>-.054</td>
<td>.024</td>
<td>4.87</td>
<td>1</td>
<td>.027</td>
<td>.948</td>
<td>.903–.994</td>
</tr>
<tr>
<td>Superoptimism</td>
<td>.121</td>
<td>.023</td>
<td>28.37</td>
<td>1</td>
<td>.000</td>
<td>1.13</td>
<td>1.08–1.18</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.68</td>
<td>.500</td>
<td>28.66</td>
<td>1</td>
<td>.000</td>
<td>.069</td>
<td></td>
</tr>
</tbody>
</table>

Note: OR = odds ratio; CI = confidence interval.
Dependent variable reference category = Program Completion Status (terminated)
$R^2$ (Cox & Snell) = .024; Model: $\chi^2 = 40.56$, $p = .000$. 

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Conclusions

This study indicates a number of significant findings. First, it seems that differences in thinking error exist among African-American and Caucasian offenders prior to CBT intervention and that these differences may be important considerations in terms of responsivity. Further, while thinking error scores decreased following CBT intervention for nearly all scales, the amount of decrease varied between Caucasian and African-American offenders. African-American offenders displayed larger decreases in thinking error for some scales, while Caucasian offenders showed larger decreases for other scales. This finding suggests that responsivity may also be different for the two groups of offenders. As such, interventions may need to be reworked to better assist offenders. There were also significant findings in terms of differences in thinking error between male and female offenders. Perhaps most interesting was the finding that female offenders indicated larger degrees of change following the CBT intervention on every thinking error scale. Clearly, female offenders appeared to be more responsive than male offenders. Finally, the current study found that certain thinking errors could predict with fairly good accuracy the likelihood of an offender not completing the CBCF program successfully.

Overall, this study produced several findings that were significant with regard to thinking error and offender responsivity. The proceeding chapter will discuss these findings and their potential implications.
CHAPTER V

DISCUSSION

The current study utilized two longitudinal designs. The first sample consisted of 527 offenders sentenced to serve in one of two community-based correctional facilities (CBCF). The second sample included the original sample of 527 offenders and included an additional 399 offenders also sentenced to serve in one of the two CBCFs. Both samples completed a battery of assessments upon intake to the CBCF programs and prior to involvement in a cognitive-behavioral intervention which was the same in all CBCF programs. Outcome data were collected from offenders upon completion of the CBT intervention approximately one week prior to successful release from the CBCF program. The data collected were examined to assess the issue of responsivity to a CBT intervention for offenders. Specifically, how race and/or gender differences might impact thinking error and thus impact the efficacy of a CBT intervention was examined. In addition, responsivity variables (race and gender) and thinking error scores were assessed to determine their usefulness in predicting offenders who will not successfully complete the CBCF program. Several interesting findings emerged from the analyses. The following section will address each of the research questions as posed in Chapter 3.
Race and Gender Differences Prior to CBT Intervention

Scores on the thinking error scales become more problematic as they increase, and higher scores are believed to be associated with a higher probability of criminal behavior. High levels of mollification indicate that the offender is more likely to blame others or external factors for criminal behavior. A disregard for thoughts that deter criminal behavior increases with higher scores on the cutoff scale. High levels of entitlement are associated with an increased attitude of ownership and privilege. Outward displays of aggression intended to manipulate and control others increase with higher levels of power orientation. As sentimentality scores increase so do an offender’s attempts to atone for past criminal behavior. Superoptimism refers to an offender’s belief that he or she can avoid the negative consequences of criminal behavior—as superoptimism increases, so does this belief. The tendency to take shortcuts in problem-solving increases as cognitive indolence scores increase, and disruptions in the thought process increase with higher levels of discontinuity (see also, Walters, 1995).

Racial differences prior to CBT intervention were found for three of the eight types of thinking error. African-American offenders reported significantly higher levels of the sentimentality thinking error than did Caucasian offenders. Caucasian offenders indicated higher levels of the discontinuity and cutoff thinking errors than did African-American offenders. Higher levels of sentimentality refer to an offender’s increased attempts to complete self-centered good deeds in an effort to atone for his or her past criminal behavior. It is plausible to suggest that given the higher levels of sentimentality among African-American offenders that perhaps African-American offenders on average tend to feel more guilt for past criminal behaviors. Possible reasons to explain the
significant difference found between the two races with regard to the discontinuity thinking error is less clear. As the discontinuity score increases it suggests that the offender experiences more disruptions to his or her thought process which lead to a lack of completion of good intentions. This is especially surprising given the higher rates of Attention-Deficit Hyperactivity Disorder (ADHD) among the African-American population (see, for example, Cuffe, Moore, & McKeown, 2005). It is plausible to assume that ADHD would be positively correlated with the discontinuity thinking error, thus it might be expected that African-American offenders would indicate higher rates of discontinuity than Caucasian offenders. Also contradictory to what was expected, Caucasian offenders had significantly higher levels of the cutoff thinking error than did African-American offenders. Given the effects of socialization on African-Americans living in greater disadvantaged inner-city communities than Caucasians, it was expected that African-American offenders would report higher levels of the cutoff thinking error. Further investigation is warranted to better understand these seemingly contradictory findings.

Thinking error differences between males and females prior to CBT intervention existed, but the only statistically significant difference between the genders was on the mollification thinking error. Male offenders indicated significantly higher levels of the mollification thinking error than did female offenders. Consequently, it would seem that male offenders are more likely than female offenders to blame others for and rationalize their criminal behavior. Studies of interpersonal violence have found that males more often voice external reasons for perpetrating the act of domestic violence; however, female perpetrators of domestic violence also tend to blame others for the domestic
violence act (see, for example, Henning, Jones, & Holdford, 2005). Among the offenders that reside in the CBCF programs at Oriana House, Inc., a much larger proportion of male offenders have admitted to or been arrested for domestic violence as compared to the female offender population. The higher levels of mollification thinking error found among male offenders might be expected.

**Race and Gender Differences Following CBT Intervention**

Only one of the eight thinking error scales assessed in the present study was found to be significantly different between Caucasian and African-American offenders. The difference between levels of the discontinuity thinking error persisted upon completion of the CBT intervention. While discontinuity scores for both groups decreased following the CBT intervention, Caucasian offenders still indicated significantly higher levels of the discontinuity thinking error than African-American offenders.

Prior to CBT intervention only the mollification thinking error scale was found to be significantly different between male and female offenders. Following CBT intervention the significant difference in levels of mollification thinking error remained and grew nearly twice as large. Differences between male and female offenders with regard to the power orientation and sentimentality thinking errors were significant as well. Males indicated higher levels of both thinking errors as compared to females. Explained earlier, higher levels of mollification among male offenders, which indicates an increased tendency to blame others, could be expected given studies of domestic violence attribution and the higher tendency for males to externalize. The higher level of power orientation among male offenders (vs. female offenders) is expected. Again,
studies have shown that males are more likely to externalize behavior as compared to females (see, for example, Miner & Clarke-Stewart, 2008; Barriga, Morrison, Liau, & Gibbs, 2001). A possible explanation for the significant difference found between male and female offenders in terms of the sentimentality thinking error is less clear. Similar to the explanation given for the difference in sentimentality levels between races, it is reasonable to assume that female offenders are more inclined to take responsibility for their behaviors. The lower mollification levels among female offenders further supports this idea.

Race and Gender Differences in Degree of Change of Thinking Error Following CBT Intervention (Over Time)

Decreases in thinking error over time were noted for both races and for all thinking errors except the superoptimism thinking error. Interestingly, participation in the CBT intervention appears to increase an offender’s confidence that he or she will be able to avoid negative consequences of criminal behavior. Alternatively, it may be that the superoptimism scale on the PICTS may be a better indication of an offender’s self-efficacy. It could be expected that as an offender moves through the CBCF program, is surrounded by a prosocial environment, and receives services, that he or she might begin to feel optimistic about his or her ability to make life changes that support a prosocial lifestyle. Further studies are warranted to tease out specifics related to the use of the PICTS thinking error scales. No significant differences between Caucasian and African-American offenders emerged in terms of the amount of change in thinking error from pre to post CBT intervention.
Findings for gender differences in the degree of change in thinking error scores following CBT intervention were similar to the racial differences reported above. Decreases in the level of thinking error were found for all scales except superoptimism. As for race, participation in the CBT intervention appeared to increase both male and female offender’s confidence that he or she could continue with criminal behavior yet avoid the negative consequences of such behavior. The difference in the amount of decrease of thinking error between male and female offenders was significant only for the cutoff thinking error scale. Female offenders lowered their cutoff thinking error score substantially more than male offenders. One explanation for the greater decrease in thinking error among female offenders and thus greater responsivity to the CBT intervention is that perhaps the dynamic of the all-female CBT groups is more conducive to learning than the all-male groups in which male offenders participate. Once again, additional research will be needed to better explain the differences.

It should be noted that for all of the ANCOVA analyses, power was relatively low (below the conventional .80 level) for many of the tests of significance for thinking error differences. This was true for tests of differences of both race and gender. Had it been possible to increase the power for the analyses it is likely that many more of the race and gender differences that were found would have been significant.

While some explanations for the differences in thinking error scores in terms of race and gender can be readily explained by findings from other studies of race and gender, some explanations can only be speculative given the relative paucity of research available on the topic of responsivity. Likewise, the usefulness of measures of thinking error to evaluate CBT intervention effectiveness is unknown. Until further studies are
conducted, explanations for race and gender differences in thinking error prior to and following CBT intervention as well as changes in thinking error over time should be taken cautiously.

**Predicting Unsuccessful Completion of CBCF Programming**

The eight thinking error scale scores and both responsivity variables (race and gender) were entered into a logistic regression procedure to assess the correlates of offenders who are terminated from the CBCF program. Offender race was not a significant predictor, but gender was. The current study found that the odds of being terminated from the program were greater for male offenders than for female offenders. Male offenders indicated higher levels of thinking error than female offenders on four of the eight thinking error scales. Male offenders showed higher levels of the mollification, entitlement, power orientation and sentimentality thinking errors. These particular thinking errors relate to externalizing blame, displaying aggression, an attitude of privilege, and self-centeredness and may work in combination to influence the likelihood of being terminated from the CBCF program.

With regard to the predictive ability of the thinking error scales, sentimentality and superoptimism scales were found to significantly predict program success. Specifically, as sentimentality thinking error increased, the odds of being terminated from the CBCF program decreased, and as superoptimism increased the odds of being terminated from the program also increased. The sentimentality thinking error is believed to assess an offender’s desire to atone for past criminal behavior through self-centered good deeds. By definition of the sentimentality thinking error it is difficult to understand
how increases could reduce an offender’s likelihood of being terminated from the program. However, if the sentimentality thinking error is in fact, a good measure of an offender’s desire to atone for past criminal behavior, but the desire is not self-centered as defined by Walters (1995), then it is feasible to believe that increases in sentimentality would decrease the probability of being terminated from the CBCF program. Higher levels of the superoptimism thinking error being related to a higher probability of being terminated from the CBCF program is a logical finding. Given that offenders with higher levels of the superoptimism thinking error believe that they can avoid the negative consequences of their criminal behavior, it is reasonable to believe that these offenders will disregard the reality of any possible legal consequences for leaving the CBCF program prematurely. Once again, additional research will be required before more definitive answers can be posited.

Contributions

This study makes several contributions to the field of correctional rehabilitation, including evaluators and policy makers in the field. This study is the first of its kind to examine differences in thinking error among offenders that are thought to be related to the issue of responsivity. Prior to CBT intervention differences in terms of race and gender were found for some of the thinking error scales. As such, to increase the effectiveness of the CBT intervention the current studies suggests that it may become necessary for correctional rehabilitation agencies to provide more individualized CBT treatment according to race and gender. Specifically, providing race-specific or gender-specific groups could potentially change the dynamic of the learning experience in the CBT intervention, thus increasing responsivity and yielding greater decreases in thinking
error. Further, the findings of the current study suggest that offender-specific thinking error or certain combinations of thinking error may be a responsivity issue worth considering. For instance, offenders who exhibit clinically significant levels of cognitive indolence and discontinuity may have very different responsivity issues to learning than offenders indicating clinically significant levels of sentimentality and mollification. The former group may benefit from a pretreatment program that addresses impulse issues or from a CBT intervention that incorporates elements that address impulse issues. Few significant differences between male and female offenders were found prior to CBT intervention. However, significant differences between the two genders increased following CBT intervention, and female offenders indicated significantly greater decreases in some thinking error scales than did male offenders following the CBT intervention. Because the CBT groups were gender-specific, this suggests that female offenders were more responsive to the intervention overall.

This study examines the feasibility of a novel approach to the evaluation of CBT interventions. Specifically those interventions designed around the theory that thinking errors influence offender behavior thus increasing the probability of criminal involvement. Traditionally, correctional rehabilitation programs have measured the effectiveness of CBT interventions using recidivism as an outcome. Discussed earlier, the use of recidivism data as an outcome is problematic in that it is variable and resource-intensive to obtain. Interestingly, to date there have been no studies examining the use of thinking error as a measure of CBT intervention effectiveness. While the findings of the current study are very preliminary, the study contributes to the field in that it suggests that measures of thinking error may be feasible in determining the efficacy of CBT
interventions. The current study also adds to the literature by highlighting the fact that it may be practical to indentify, by thinking error, certain subgroups of offenders, thereby increasing the responsivity of the intervention for that particular subgroup.

Finally, the present study contributes to criminal justice policy in that it suggests that a more efficient means of evaluation may be available to agencies tasked with evaluating CBT interventions. As discussed earlier in this paper, evidence-based and data-driven approaches to program design, implementation and maintenance have become increasingly important in recent years and are preferred over programming that “seems to work” or “just feels right.” Should the use of measures of thinking error be found to be a feasible approach to increasing offender responsivity and evaluating CBT intervention effectiveness, then policy makers will have a more manageable and cost-effective means by which to require criminal justice agencies to evaluate and improve CBT interventions for offenders.

While the findings of the current study can contribute to and may have potentially many implications to criminal justice policy, the next step is to construct additional studies to further discern the relationships between CBT intervention and thinking error. The notion that thinking error might be a feasible means by which to tailor the delivery of a CBT intervention to a particular subgroup of offenders thus increasing responsivity and by which to evaluate the effectiveness of CBT interventions is novel and has not been explored in any detail to date. While only scratching the surface, the findings of the present study are promising and lay some of the groundwork for future research.
Limitations

There are several limitations to the current study. First, four different CBCF programs were utilized for the study and although all four programs are operated by the same agency, program differences may exist. For instance, the Summit County CBCFs and Seneca County CBCFs are under the supervision of different managers. Further, although all program staff participate in the same training, differences influenced by personal characteristics or facility may exist with regard to staff-offender interaction and delivery of cognitive-behavioral and other treatment programming.

A second limitation of the current study is in the ability to accurately measure treatment hours of cognitive-behavioral programming. Although attendance to cognitive-behavioral programming is tracked, cognitive-behavioral skills are to be modeled and taught by CBCF line staff in everyday interactions with offenders. Incidences of modeling or practicing cognitive-behavioral skills by line staff with offenders is not recorded and cannot be measured accurately. Individual CBCF staff differences would likely influence the amount of exposure to cognitive-behavioral modeling and practice with offenders.

A third limitation to the current study is the potential variability in responses to the data-collection tools. The LSI-R is administered by Intake Specialists who have been trained to administer the tool. However, responses to the LSI-R can be influenced by the truthfulness of the offender and also by the subjectiveness of the Intake Specialist. Similarly, the PICTS is a self-report measure and thus its accuracy relies on the willingness of the offender to respond honestly to the question items. Further, distractions
in the environment in which the offenders are completing the PICTS could influence responses.

A fourth limitation to the study is that there was no measure of thinking error post-release from the CBCF program. Consequently, whether the measured decrease in thinking error was sustained or for how long was not assessed. The finding that only two thinking error scales were found to be significant predictors of program failure suggests that the study may be limited by measurement error of the PICTS.

The final and most significant limitation to the study is the design that was utilized. The current study employed a one-group pretest-posttest design and thus was vulnerable to several threats to internal validity. The threat that outside events might have occurred and influenced offenders participating in the study and thus the results (history) is an important concern, given the increased freedom offenders receive as they progress through the program. While referrals for clients are typically constrained to a small selection of agencies (e.g., employment, education), differences in social networks, which each offender has access to toward the end of his or her placement, could potentially influence the results of the study. Offender maturation, the reliability of the assessment tool (e.g., PICTS) and the testing experience are believed to be relatively low threats to the internal validity of the study. The placement in the program was relatively short, yet long enough to reduce any influence the testing experience may have on the posttest. Studies have shown the PICTS to be a reliable measure (Walters, 1995). The selection-maturation threat is also believed to be minimal given the relatively short duration of the program.
Despite these limitations, the current study furthers the research in the substantially understudied area of responsivity with regard to the efficaciousness of cognitive-behavioral interventions for offender populations.

**Future Research Directions**

Future research is needed in the area of offender responsivity as well as the utility of thinking error as a measure of CBT intervention effectiveness. Research should include the assessment of additional measures of thinking error. There are a limited number of assessments designed to measure thinking error, but all measure thinking errors that are identical or similar to the PICTS assessment. Other thinking error measures should be utilized individually or in conjunction with the PICTS assessment in order to compare and validate the thinking error scales.

Additional research examining how specific thinking errors or thinking error “profiles” might affect responsivity is needed. Clinically significant levels of any particular thinking error could have implications for responsivity in that it could hamper (or facilitate) the learning process during CBT intervention. Likewise, it is possible that certain thinking error profiles (e.g., clinically significant levels of mollification, sentimentality and superoptimism) could also play a role in responsivity. Work is needed to identify subgroups of offenders with certain thinking errors or thinking error profiles and assess their responsivity to CBT intervention.

Future studies should include additional control variables, including variables related to the fidelity of the CBT intervention. The present study operated on the assumption that the CBT intervention was being delivered to all offenders as designed regardless of facility, instructor or group. While the CBT program is periodically
assessed for adherence to the curriculum, there was no attempt in the present study to validate fidelity. Further, there was no attempt to assess that each facility and each instructor was delivering the intervention equally effectively. Variables such as IQ, personality disorder and drug use are just a few of the possible variables that should be included as control variables in future research.

Much more work is necessary to discern how and why race or gender the responsivity is influenced in terms of thinking error. Why female offenders displayed greater changes in all thinking errors as compared to male offenders after CBT intervention is unknown. Additional research will need to examine variables including, but not limited to, group dynamics, the teaching style of the CBT instructor and the CBT curricula. Other responsivity issues should be examined as well with regard to how they may affect thinking error. For example, studies assessing the effect of CBT instructor race or gender are warranted. It may be important to provide female CBT instructors to all-female groups of offenders. The same may be true with regard to race.

The assumptions made in this study to attempt to explain significant findings are speculative only. While some explanations are based on studies of gender or racial differences found in other fields, none of the findings of extant studies can be directly related to the current study. Consequently, it is necessary that future research be designed to specifically examine variables that have been shown to be related to race and gender differences, and to assess the relationship those variables have to thinking error and the issue of responsivity. For instance, does ADHD impact thinking error and responsivity to CBT intervention, thus making the intervention less effective for Caucasian offenders?
The use of thinking error to predict offender success in completing the CBCF program is the first of its kind. While findings indicate that certain elevations in thinking error may increase or decrease the likelihood of an offender not completing the CBCF program, more studies are warranted in order to better understand how these particular thinking errors influence program completion. Should future research find that elevations in specific thinking errors are related to an increased probability of an offender not completing the CBCF program then curricula can be tailored to these “high-risk” offenders in an attempt to reduce the likelihood of these offenders being terminated from the program prior to completion.

Finally, because recidivism is the current standard outcome variable used to evaluate the effectiveness of CBT interventions, future studies of thinking error should include recidivism. It will be important to demonstrate a relationship between thinking error and recidivism before the field and its policy makers will endorse thinking error as a viable measure of CBT intervention effectiveness.

Conclusions

Research has shown race and gender to be important factors that have implications for an individual’s involvement with the criminal justice system. Both are related to culture which has strong influences that provide opportunity for (or protect against) criminal behavior. Further, an individual’s race and/or gender has been shown to influence the way in which one is viewed and treated once involved in the criminal justice system, including implications for arrest and sentencing. It stands to reason that thinking error and thus success in a CBT intervention may also be influenced by race and
gender. As such, the implications of an offender’s race and gender warrant consideration with regard to responsivity to offender rehabilitation interventions.

This study examined differences by race and gender with regard to levels of thinking error prior to and following CBT intervention. Additionally, changes in thinking error levels were examined by race and gender following CBT intervention. How thinking errors might be related to the increased likelihood of an offender being terminated from the CBCF program prior to completion was also examined. The findings were explained with regard to their relationship with responsivity. The study consisted of male and female offenders of Caucasian and African-American race who were participants in the same CBT intervention.

While the goal of cognitive-behavioral interventions is to teach offenders to identify and correct their thinking errors thereby reducing the risk of recidivism, current criminal justice policy assumes that cognitive-behavioral interventions are equally effective regardless of gender, race or residential setting of the offender. This assumption stands in stark contrast to the research efforts that have moved the field forward over the past several decades. The issue of specific responsivity is important to consider if the goal is to refine offender rehabilitation interventions to be the most efficacious and cost-effective means of rehabilitation available to the criminal justice system.

Findings indicate that differences in some thinking error levels differ significantly between Caucasian and African-American offenders prior to participation in a CBT intervention. Further, some significant differences persisted and others emerged following participation in the intervention. Although different thinking errors were involved, findings in terms of gender differences were similar to that of race. The
findings of the regression analysis suggest that certain thinking errors may act to inhibit or facilitate an offender’s ability to complete the CBCF program as sentenced. While additional research is needed, the findings suggest that to adequately address issues of responsivity, programs may need to focus on differences in thinking error based on race and gender.

This study provides an important first step in an effort to increase responsivity to CBT interventions based on race and gender. If thinking error is indeed related to criminal behavior then more specific targeting of thinking errors through revised CBT curricula should work to further reduce thinking errors and thus recidivism making CBT programming for effective. In part, the targeting of thinking error includes increasing the responsivity of offenders to the CBT intervention, including its curriculum, facilitators and the dynamic in which it is taught (e.g., race-specific groups).

As future research delves into the specifics of how and why thinking errors differ for each subgroup of race and gender, the findings can benefit agencies tasked to rehabilitate offenders by providing more effective evidence-based interventions. Agencies may also be provided with a more reliable and less resource-intense means by which to evaluate the efficacy of CBT interventions. Future research will also guide criminal justice policy. As such, policy makers will have the information needed to draft more comprehensive and informed criminal justice policies geared toward the refinement of interventions for offenders. Thus, future CBT interventions can be more effective and efficient despite severely limited resources.
ENDNOTES

1 The Level of Service Inventory – Revised (LSI-R) was created by Don Andrews and James Bonta. More information about the LSI-R, including purchasing information can be found at Multi-Health Systems, Inc., 1-800-456-3003 (www.MHS.com).
BIBLIOGRAPHY


Walters, G. D. (2001). *The Psychological Inventory of Criminal Thinking Styles, version 4.0 [measure].*


APPENDIX A

HUMAN SUBJECTS APPROVAL
Registration Form

Please complete this form if you propose to conduct a project that involves the interaction with or collection of information from individuals that meets one or more of the criteria below. IRB review is not required because:

☐ The project does not meet the Common Rule definition of research.
☐ The project does not collect information "about" the individuals with whom the research team interacts.
☐ Results will be shared only with the client or stakeholder(s) for private use for evaluation of an established program or for other non-research purposes.
☒ This project utilizes only data from secondary sources that are not individually identifiable.
☐ This project is an internal evaluation intended for quality control of an ongoing program only.
☐ The project involves only oral history activities, such as open-ended interviews, that ONLY document a specific event, or the experiences of individuals without intent to draw conclusions, generalize findings, or influence policy or practice.

Project Title: Changing criminal thinking: Evaluating the effectiveness of cognitive-behavioral programming in community corrections.

Principal Investigator (PI): Daric Kennedy
PI Phone & email: 937-239-4649 drk3@akron.edu
Co-Investigators (list all co-investigators): n/a
Faculty Advisor (if PI is a student): Margaret Stephens, PhD

Provide below a brief description of the purpose of this study and the type and source of the information on individuals that you will use. (The space will expand as you type.)

This purpose of this study is to conduct an evaluation of the "Thinking for a Change" cognitive-behavioral programming at Oriana House, Inc., a community corrections agency in Summit County. The study will examine cognitive change among offenders, including cognitive change specific to ethnicity, gender, risk-level and other demographic variables. Secondary data stripped of identifiers will be used. The data are from offenders confined to the Community-based Correctional Facility (CBCF) at Oriana House, Inc. Data include demographic information (e.g., marital status, gender, education), risk/need assessment information and criminal thinking style information from the Psychological Inventory of Criminal Thinking Style (PETS). Data are obtained through self-report and assessments conducted by staff employed by Oriana House, Inc.

Investigator's Assurance

I certify that the information provided in this Registration Form is complete and accurate. I understand that as Principal Investigator, I have ultimate responsibility for the ethical conduct of this project.

Principal Investigator: [Signature] Date: 8/27/09

Faculty Advisor's Assurance

I certify that the student is knowledgeable about the regulations and policies governing the research and has sufficient training and experience to conduct this particular study.

Faculty Advisor: [Signature] Date: 9/2/09

The University of Akron Institutional Review Board

Approved 2/2008

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