

DEVELOPMENT OF A MULTIDIMENSIONAL APPROACH TO UNDERSTANDING
YOUTHFUL OFFENDERS: THE INFLUENCE OF PSYCHOSOCIAL
AND PERSONALITY RISK FACTORS

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This study employed a multivariate, multidimensional approach to understanding psychosocial and personality variables associated with institutional maladjustment and recidivism among youthful offenders. Participants included nine hundred serious and chronic male youthful offenders incarcerated in the Texas Youth Commission (TYC); sample sizes varied by analysis. Empirically-validated psychosocial factors (e.g., intelligence, home approval status), past criminal history variables, and two self-report personality measures of empathy and hostility were entered into hierarchical regression and structural equation modeling (SEM) analyses to predict institutional behavior and recidivism at one- and three-year intervals after release from the TYC.

Confirmatory factor analysis of the personality measures revealed one underlying factor indicative of their theoretical constructs of empathy and hostility. Some differences were noted between youth in the specialized treatment programs; however, effect sizes were small to moderate. Overall, regression and SEM results indicated the variables accounted for a meaningful proportion of the variance in the outcomes. Specifically, although length of stay in the TYC was associated with institutional behavior, younger age of onset, higher hostility, and greater home disapproval also contributed significantly. Past criminal behavior was predictive of future reoffending, but lower empathy, greater home disapproval, and younger age of onset accounted for a substantial portion of the variance in recidivism. Institutional maladjustment served as a

mediator between the psychosocial and personality variables and the recidivism outcomes. Treatment implications are provided, including a discussion of the tenuous association between length of sentence and recidivism and an emphasis on the importance of evaluating dynamic personality and psychosocial variables beyond static measures of past behavior.

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CHAPTER 1

INTRODUCTION

Recent years have been marked by a resurgent concern over the problem of serious and violent juvenile crime. This concern has been fueled in part by the media's attention to high-profile incidents, and also by documented, although time-limited, increases in levels of serious and violent juvenile crimes. Between 1987 and 1994 the nation witnessed significant increases in juvenile referrals for (a) general delinquency (26%), (b) violent crimes (56%), (c) homicide (55%), (d) aggravated assault (80%), and (e) weapons (86%) (Butts, Snyder, & Finnegan, 1994).

Juvenile courts responded promptly to these developments; however, the specific solution varied across states. Some states implemented an authoritarian approach emphasizing control, incarceration, and juvenile waiver to adult court, whereas others stressed the importance of rehabilitation and deinstitutionalization. The general trend across the United States, however, seemed to be an increase in the prosecution of delinquency cases in juvenile court. In 2000, United States courts with juvenile jurisdiction handled 1.6 million cases, which represents an increase of 43% since 1985. Evidence exists for a parallel increase in the sentencing and incarceration of juveniles. In fact, the number of delinquency cases involving detention increased 41% between 1985 and 2000 (Snyder, 2003). The number of juveniles transferred to adult criminal courts rose 68% between 1988 and 1992 (Butts et al., 1994).

Overall, it appears the juvenile justice system employed punitive measures in response to the apparent increases in juvenile crime during the 1980's and early 1990's. Not surprisingly, more recent statistics reveal a decrease in many crimes committed by

adolescents, particularly violent offenses. In 2003, the Office of Juvenile Justice and Delinquency Prevention (Snyder, 2003) reported a decline in the juvenile arrest rate for the Violent Crimes Index for the ninth consecutive year, falling 48% from its 1994 peak; the decline in violent offending was greater for juveniles (32%) than for adults (12%). Murder arrest rates were 30% lower in 2003 than in 1993.

Recent arrest statistics also reveal a similar decline in other crime categories. Juvenile arrest rates for property offenses decreased in 2003, reaching their lowest level in at least three decades. Arrests for weapons law violations and runaways also declined. Re-arrests rates show similar improvements. Locally, the Texas Youth Commission (TYC) reported improvements in rates of violent (11.2% to 8.7%) and felony recidivism (36.9% to 31.1%) between 1997 and 2001 (TYC, 2002). Despite these encouraging trends, some problems remain. Between 1994 and 2003, juvenile arrests for drug abuse violations and driving under the influence both increased. Compared with cases processed by juvenile courts in 1985, juvenile courts handled 175% more obstruction of justice cases, 160% more simple assault cases, and 103% more disorderly conduct cases in 2000.

The exact nature of the relationship between juvenile crime rates and juvenile justice policy is unclear. However, it is expected that policymakers and juvenile justice officials will respond in ways believed to be associated with a downward trend in crime and arrest rates. Their continuing support for programs and policies with demonstrated efficacy in preventing delinquency, treatment intervention, and reducing recidivism is anticipated. One measure aimed at reducing future reoffending for delinquent youth involves the provision of a comprehensive continuum of interventions and sanctions

available to juvenile offenders (Wiebush, Baird, Krisberg, & Onek, 1998). There has been a rapid proliferation in the use of alternatives to incarceration, including intensive probation supervision, boot camps, electronic monitoring, and house arrest. Some empirical evidence exists for the efficacy of such approaches. For example, the TYC attributed improvements in recidivism rates to more intensive monitoring of youth on parole (TYC, 2002). Nonetheless, continued investigation of the factors associated with juvenile offending and recidivism may help shed light on additional avenues of treatment.

Identifying Important Variables and Assessing Risk

It is crucial that a collaborative effort is made between policymakers, juvenile justice officials, clinicians, and researchers to identify variables important for (a) understanding the juvenile offender population, (b) estimating potential risk for delinquency, (c) implementing successful treatment, and (d) preventing future delinquency. Clinical researchers interested in studying juvenile crime trends and effective treatment programming often focus on specific variables and their relation to outcomes such as delinquency, institutional behavior, and recidivism. However, this type of univariate approach may miss important relationships between variables. Several multivariate approaches (e.g., confirmatory factor analysis; hierarchical regression) are available for analyzing the interrelationships between variables underlying such negative outcomes.

To gain a full understanding of effective policy and programs, a comprehensive evaluation of the offender and related environmental influences is indicated. Juvenile justice systems must have the capacity to directly link the nature of their intervention

with the individual offender's need for control, supervision, and services, in their efforts to maximize the efficiency, effectiveness, and proportionality of their responses. In their risk-need-responsivity theory of criminal conduct, Andrews and Bonta (1996) stated that in order to be effective, treatment must be matched with the individual offender's risk of reoffending. They argued that intensive services should be provided for high-risk offenders with only minimal services for low risk offenders; although the ability to effectively gauge outcomes through such an approach is likely to be diminished by prediction errors.

An enduring challenge for clinicians and researchers is to offer information crucial to the provision of ethical assessment and effective management of youthful offenders, at every level of processing through the correctional system. Wiebush et al. (1998) emphasized the importance of estimating the likelihood of an adolescent offender's continued delinquent behavior in light of available interventions at all levels of involvement with the juvenile justice system, including arrest, detainment, adjudication, correctional placement, and probation/parole. These researchers asserted that comprehensive risk assessment must be applied to each adolescent offender in order to ensure consistent treatment decisions and more effective resource allocation.

Across empirical studies and clinical settings, negative outcomes such as delinquency, violence, or recidivism are most often assessed; however, the specific evaluation methods vary depending on the specific context, the purpose of the assessment, and unique characteristics of the population. Sites differ in the formality, administration, and application of their risk assessment procedures. Early research by Barton and Gorsuch (1989) indicated that actuarial measures predominate the

instruments used for classification of juvenile offenders. They found that 47% of the agencies used formal actuarial risk assessment tools, 30% had other formal classification procedures, and 22% did not employ formal instruments to aid in their classification. Actuarial risk assessment instruments are often created by and implemented exclusively within individual state corrections agencies, although they may share several items. For example, Wiebush et al. (1998) examined eight different empirically-validated actuarial instruments used with adolescent offenders, and found a core set of factors were consistently included: age at first referral, number of prior offenses, substance abuse, delinquent peers, and family functioning. However, marked divergences were observed in the number of site-specific factors and their application to placement and treatment decisions.

In considering what variables to include in such assessments, Smith, Lizotte, Thornberry, and Krohn (1997) operationalized risk factors as those characteristics associated with a 300% increase in serious delinquency. In general, risk factors for adolescent offenders are typically operationalized as the specific variables related to negative outcomes including recidivism, continued delinquency, violent behavior, and treatment failure.

Types of Risk Factors

Kraemer et al. (1997) developed a framework for describing risk factors. At the most basic level, factors are correlates when they occur concurrently with negative outcomes, such as institutional behavior problems or recidivism. For example, lack of parental monitoring is associated with delinquency during mid-adolescence (Farrington & Hawkins, 1991). Next, factors found to reliably predict negative outcomes can be

described as predictive risk factors. The construct of psychopathy is considered a robust predictor of general criminality, violent criminality, poor treatment response, and recidivism; its ability to predict violence has been referred to as “unparalleled” (Salekin, Rogers, & Sewell, 1996). Finally, factors manipulated through experimentation or intervention associated with changes in the negative outcome can be described as causal risk factors. Empirically, once factors are determined to be correlated with outcomes, further research should document the potential for prediction and, ultimately, the potential for causation. Causal risk factors then become the empirical foundation for building effective interventions.

Risk Factors in Combination

Ideally, risk assessment measures are composed of specific, empirically-validated items, which independently or in combination, predict a specific outcome (Hanson & Thorton, 2000; Harris, Rice, & Quinsey, 1998; Wiebush et al., 1998). The effects of utilizing measures with multiple risk factors may be cumulative in the sense that the presence of more risk factors is presumably related to a higher probability of negative outcome (Fergusson & Lynskey, 1996). In fact, Luthar (1993) suggested that the best approach to identifying high-risk status may be through the use of composite indices, as used in actuarial risk instruments, which incorporate a range of potential equally-weighted risk factors. However, some researchers (e.g., Bagozzi & Heatherton, 1994) warn against combining items across dimensions in an index, as it “could misleadingly yield a weighted average and obscure the differential contributions of the dimensions.” To address this issue, the developers of some actuarial tools (e.g.,

Violence Risk Appraisal Guide; VRAG) have incorporated a specific weight for each item, based on the variable's unique contribution to the prediction of the outcome.

Items on many risk instruments (e.g., Psychopathy Checklist: Youth Version) utilize ordinal ratings reflecting whether each symptom or trait is absent (0), sub-threshold (1), or present (2). In many cases, it is possible that the trait or symptom is actually continuously distributed, but this dummy coding method is utilized to simplify the assessment process. An overall index score is calculated through the summation of various risk factors, with certain cutoff denoting the level at which the score is considered a strong predictor of negative outcome. As discussed previously, among offenders, this score may be used to distinguish between "high" and "low" risk and to determine subsequent placement, treatment, and release decisions.

A close examination of using categorical variables and summative indices of risk reveals potential methodological problems. Results may be adversely affected by the skewness of ordinal variables, such that parameter estimates are reduced, and factor loadings and correlations are underestimated. In addition, ordinal variables cannot be analyzed with certain statistical procedures. For example, they are considered inappropriate for inclusion in factor analysis, which utilizes the maximum likelihood procedure (Everitt & Dunn, 2001; West, Finch, & Curran, 1995). Moreover, erroneous relationships between variables may emerge because of the similar degree of skewness in their error variances (West et al., 1995). Even the best risk assessment instruments result in substantial prediction errors, specifically false positives. When used with offenders, many who are identified as "high risk" never continue to commit crime or engage in delinquent behavior, while many "low risk" offenders do. Finally, the ability of

a combination of risk factors (e.g., low intelligence, substance use) to enhance predictions may be due to the risk factors reflecting multiple indicators of a single underlying latent variable (i.e., disinhibition).

Risk Factors among Youthful Offenders

In accordance with Kraemer et al. (1997)'s model for understanding risk factors, it is important to analyze the unique and combined effect of various factors exhibiting predictive effects on youthful offenders' behavior. Research has attempted to uncover the factors underlying or mediating negative outcomes such as criminality, poor institutional behavior, violence, and recidivism among youthful offenders, extending beyond the individual characteristics of offenders. In general, research (Garmezy, 1983; Hawkins, Catalano, & Miller, 1992; Mulvey, Arthur, & Reppucci, 1993; Rutter, 1987; Werner & Smith, 1982; Wiebush et al., 1998) has indicated that risk factors fall into three major categories: family, community, and individual.

Previous research was reviewed for studies investigating these categories of risk variables among similar high-risk populations. For the purposes of this study, specific variables that contributed to predictions of certain negative outcomes [e.g., (a) overall delinquency or criminal behavior, (b) maladjusted institutional behavior, or (c) violence, particularly among incarcerated offenders] were included in the literature review. The range of variables with demonstrated predictive utility among young offender populations is extensive and includes both manifest, or measured variables (e.g., intelligence, age of onset), and risk factors categorized according to the underlying theoretical concept, or factor, they represent (e.g., empathy, hostility).

Development and Personality Risk Factors

Intellectual Functioning and Academic Achievement

Low intellectual functioning and academic achievement are considered robust risk factors for juvenile delinquency. In a longitudinal study of at-risk boys, Loeber, Farrington, Stouthamer-Loeber, Caspi, and Lynam (2001) found low IQ was a strong risk factor for offending and the development of conduct problems. Studies (Loeber et al., 1998; Lynam, Moffitt, & Stouthamer-Loeber, 1993; Quay, 1987; Wilson & Hernstein, 1985) have frequently reported that delinquents score eight to 10 IQ points lower than non-delinquents. Various interpretations of this finding have been proposed. For example, Masten and Coatsworth (1998) argued that delinquents score poorly on IQ tests and perform inadequately in school because of other personality and behavioral characteristics. Lynam et al. (1993) cited a mediating effect of IQ on academic achievement: low intellectual functioning promotes poor school achievement, which in turn is highly associated with delinquency. White, Moffitt and Silva (1989) recommended examining more complex models to assess this relationship, instead of limiting research to simple effects (e.g., cognitive impairment on delinquency).

Moffitt (1993a) reviewed several decades of research linking lower intelligence to conduct problems, aggression, and delinquency. She summarized numerous studies suggesting how lower intelligence might lead to the development of conduct problems, such as impairing a person's ability to a) develop self-control, b) delay gratification, c) develop appropriate conflict resolution skills, d) develop positive social relationships, or e) succeed in school. Although several methodological problems were noted across studies, Moffitt concluded that youthful offenders at high-risk seem to have specific

verbal and executive functioning deficits that are not attributable to the effects of other psychosocial variables (e.g., race, lower socioeconomic status, school failure).

In a review of the literature, Quay (1987) found evidence that delinquents' Verbal IQ scores are lower than their Performance IQs. These researchers attributed the eight-point IQ deficit among delinquents to inferior word knowledge and deficits in verbal coding and verbal reasoning skills. Also, young, conduct-disordered offenders tend to have lower verbal intelligence than conduct-disordered youth who also display psychopathic traits (e.g., callousness; Loney, Frick, Ellis, & McCoy, 1998). A potential explanation is that IQ and behavioral inhibition are related, and that impairments in both lead to conduct-disordered behavior. Deficits in verbal reasoning may interfere with one's ability to consider alternative strategies to resolving conflict and increase the likelihood of engaging in aggressive and violent behavior.

It is possible that inadequate participation in education is also important, as some research (White et al., 1989) indicates that intellectual functioning and academic achievement should be considered as separate yet interrelated risk factors. Auffrey et al. (1999) tested the separate contributions of IQ and academic achievement. They found that offenders with higher IQs were at slightly greater risk for violent behavior, while those with higher educational achievement were much less likely to have been arrested for a violent crime. These researchers postulated that violent youth may have less educational success because of the social isolation that results from academic failure. In sum, while cognitive functioning is linked to delinquency, the relationship is complex and may reflect more global impairments in verbal processing and/or

behavioral inhibition. Certain dimensions of pathological personality are also critical to this current discussion.

Psychopathic Personality

Most clinicians and researchers agree that psychopathic personality is associated with a constellation of affective, interpersonal, and behavioral characteristics. Certain personality features are considered core to the concept of psychopathy, including lack of guilt and remorse and a callous disregard for the feelings, rights, and welfare of others (Cleckley, 1976; Hare, 1991). Furthermore, psychopaths have deficits in processing emotional stimuli (Blair et al., 2002; Lorenz & Newman, 2002), which is consistent with their shallowness and profound lack of empathy. The concept of psychopathic personality also incorporates well-established historical risk factors including age of onset and previous criminality.

Psychopathy components. Traditional research on psychopathy (Hare, Hakstian, Forth, Hart, & Newman, 1990) suggests two underlying dimensions essential to its classification. Factor 1 reflects interpersonal and affective features of psychopathy, such as egocentricity, callousness, and manipulativeness. Factor 2 reflects behavioral characteristics of psychopathy, such as impulsivity, delinquency, irresponsibility, and early behavior problems. The Factor 2 criteria incorporate past delinquent and criminal behavior, whereas the Factor 1 criteria encompass antisocial attitudes and personality characteristics. Cooke and Michie (2001) attempted to adhere to Cleckley's (1976) early conception of psychopathy in their development of a three-factor model of psychopathy, excluding antisocial behavior. Although criminality was neither necessary nor sufficient for early clinical definitions of psychopathy (Cleckley, 1976), psychopaths are typically

identified and evaluated as a result of their antisocial behaviors. The most recent conceptualization of psychopathy (see Vitacco, Neumann, & Jackson, 2005) involves a four-factor model, which incorporates the antisocial behavior dimension in addition to three other dimensions reflecting a deceptive interpersonal style, shallow affective, and an impulsive, irresponsible lifestyle. In addition, the four-factor model has demonstrated factor invariance across racial groups.

Psychopathy Among Adults

The concept of psychopathy has a long history in clinical practice and research, particularly in its application to understanding adult offenders. Psychopathy is a robust risk factor among adult offenders for general criminality, violent criminality, recidivism, and poor treatment response. In fact, Hart and Hare (1996) reported that adult offenders classified as psychopathic commit more offenses and more types of offenses than do nonpsychopathic offenders, regardless of setting (i.e., community or institution).

Adult psychopathy as a predictor of poor institutional behavior. Psychopathy among adults is an established risk factor for poor institutional behavior, including violence and other behavioral infractions (Buffington-Vollum, Edens, Johnson, & Johnson, 2002; Hare & McPherson, 1984; Serin, 1991, 1996). Furthermore, the treatment prognosis of adults classified as psychopathic is poor. Ogloff, Wong, and Greenwood (1990) found that psychopaths show poorer treatment participation than their nonpsychopathic counterparts. These researchers concluded that psychopaths in a therapeutic community program discontinued earlier, were less motivated, and showed less overall clinical improvement than other offenders. Other research by Rice and Harris (1992) suggested that prison treatment and resocialization programs may

actually be associated with an increase in violent recidivism among psychopaths.

Salekin (2002) challenged this pessimistic view of treatment efficacy with psychopathy in a meta-analysis of treatment studies. Results indicated good success rates for highly structured, intensive treatment programs. However, Harris and Rice (2006) provided cogent arguments against the selection and interpretation of studies and statistical procedures employed by the Salekin (2002), and therefore seriously questioned the positive findings that were offered in this meta-analytic study.

Adult psychopathy as a predictor of violence. Adult psychopathy is well-established as a predictor for violent behavior. In Hart's review (1998), he concluded that psychopaths commit more violence and more types of violence than do nonpsychopaths and asserted that psychopathy is a "strong and robust risk factor" for violence. In their meta-analytic review of psychopathy and violence among predominately adult offenders, Hemphill, Hare, and Wong (1998) found that psychopaths were four times more likely to reoffend violently than other offenders in the first year following prison release. In a more comprehensive meta-analysis of psychopathy, Salekin et al. (1996) reviewed a large number of studies incorporating the Psychopathy Checklist-Revised™ (PCL-R; Hare, 1991; copyrighted by Multi-Health Systems, Toronto, Ontario). Given their findings of a moderate overall effect size, results indicated psychopathy is indeed a robust predictor of violence. Furthermore, psychopathy's ability to adequately predict violence is evidenced across several contexts of risk assessment. For example, Serin (1991) concluded that violent psychopaths are qualitatively different than violent nonpsychopaths, with a greater likelihood of using instrumental aggression, threats, and weapons.

Adult psychopathy as a predictor of general recidivism. In their meta-analytic review of psychopathy, Hemphill et al. (1998) found that the general recidivism rate among adult psychopaths was approximately three times higher than nonpsychopaths. Their results also indicated that PCL-R™ scores contribute incrementally to the prediction of recidivism beyond that offered simply by criminal history variables. Recent research, however, has suggested that the link between psychopathy and recidivism among adults may be mediated by other factors. In a longitudinal study by Looman, Abracen, Serin, and Marquis (2005) treatment response seemed to serve as an intervening variable. Specifically, they found that high-risk sex offenders with high psychopathy scores and poor treatment progress were much more likely to reoffend than those with low psychopathy scores. High psychopathy scorers with good treatment response recidivated equally with nonpsychopathic offenders.

Psychopathy Among Children and Adolescents

Several empirical advances in the study of adult psychopathy have prompted researchers to address the applicability of the psychopathy construct to children and adolescents. In addition, psychopathic adults usually show an early onset of behaviors and traits associated with the construct, providing additional rationale for examining the phenomenon in youth. In the early and mid-1990s, a body of literature was beginning to develop on the issue of psychopathy in youth and its predictive utility for negative outcomes, including delinquency, violence, poor treatment response, and reoffending. In response to the surge in this area of research, some authors (e.g., Seagrave & Grisso, 2002) have expressed concerns related to whether (a) using the term “psychopathy” to describe youth is even appropriate, given its negative connotation; (b)

the manifestations of psychopathy are similar across developmental stages, and (c) it is feasible to assess psychopathy among adolescents. Notwithstanding these concerns, psychopathy continues to be a predominant topic in the literature on youthful offenders.

Base rates / prevalence of psychopathic traits in youth. A growing body of literature has involved an investigation of traits of adult psychopathy in adolescents. Some researchers highlight the fact that a very small proportion of adolescent offenders (6-8%) is responsible for the majority of serious criminal offenses (60-85%; Loeber & Farrington, 2000; Moffitt, 1993b). The base rates of psychopathic traits among these most serious and chronic youth are relatively consistent across studies. Two studies with chronic adolescent offenders concluded that 20-25% exhibited high levels of psychopathic traits (Brandt, Kennedy, Patrick, & Curtin, 1997; Christian, Frick, Hill, Tyler, & Frazer, 1997). Similarly, in a study with an incarcerated young offender sample, the prevalence rate for psychopathy was 21.5% (Salekin, Neumann, Leistico, DiCicco, & Duros, 2004a). According to the developers of the Hare Psychopathy Checklist: Youth Version (PCL: YV; Forth, Kosson, & Hare, 2003), the base rate for psychopathy varies according to context; the prevalence is approximately 25% for institutionalized male adolescent offenders and about 10% for male adolescents on probation.

Some researchers (e.g., Lynam, 2002; Seagrave & Grisso, 2002) caution against overestimating psychopathy in young offenders, as psychopathic traits may be somewhat normative among delinquents. However, others (e.g., Frick, 2002) assert that although psychopathy may include some extreme variants of normal personality functioning, particularly during adolescent development, it is the cumulative effect of several of the essential characteristics that comprise the construct of psychopathy.

Specific components of psychopathy in youth. In order to minimize the potential for misclassification (i.e., false positives), Beauchaine (2003) postulated that investigations of psychopathy should focus on indicators specific to the construct, rather than casting a wide net to include symptoms of all externalizing disorders, including conduct disorder. Specifically, there has been an increasing emphasis on investigating certain affective and behavioral attributes that strongly correspond to adult psychopathy and predict negative outcomes such as violence and recidivism.

Some discussion exists as to which components of psychopathy might be most significant for identifying delinquent youth who represent more traditional conceptualizations of psychopathy. For example, Lynam (1998) identified children with a hyperactive-impulsive-attention deficit (HIA) presentation combined with conduct problems as remarkably similar to adults with psychopathy and coined “fledgling psychopaths” as the term for these youth. Studies (e.g., Lahey & Loeber, 1997; Lynam, 1997) have shown that youth characterized by hyperactivity, impulsivity, and inattention (HIA) are more likely than those without this dispositional style to exhibit antisocial behavior during adolescence and adulthood. These behavioral difficulties reflect the impulsive dimension assessed by psychopathy measures. Other researchers have focused on the affective deficits parallel to those observed in adult psychopaths among a subtype of conduct-disordered youth (Christian et al., 1997; Frick, 1998). They theorize that the presence of certain personality characteristics (i.e., callous, unemotional traits; lack of empathy) in combination with impulsivity and conduct problems distinguish a unique subgroup of adolescent offenders who most closely resemble adults classified as psychopaths.

Recent research continues to support the findings that youth who have both behavioral indicators associated with psychopathy (e.g., impulsivity, criminal behavior) and callous and unemotional (CU) traits engage in more problematic behavior and show more chronic patterns of offending (Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005). Whether conceptualized as a personality syndrome or as a cluster of traits associated with its affective, interpersonal, impulsive, and antisocial components, psychopathy has shown significant relationships with past criminality, poor treatment response, violence, and recidivism among adolescent offenders (e.g., Forth, Hart, & Hare, 1990; Kosson, Cytterski, Steuerwald, Neumann, & Walker-Matthews, 2002). Moreover, recent research (Neumann, Kosson, Forth, & Hare, in press) with a large cross-national sample of incarcerated male adolescents suggests that the dimensions underlying psychopathic features in youth parallel the latent dimensions identified in adults (Hare & Neumann, 2006; Neumann, Vitacco, Hare, & Wupperman, 2005).

Psychopathy as a predictor of institutional behavior among adolescents.

Research with adolescent offenders (Forth et al., 1990; Murdock Hicks, Rogers, & Cashel, 2000; Rogers, Johansen, Chang, & Salekin, 1997) has demonstrated psychopathy's role as a correlate and predictor of institutional problems, including violent and nonviolent institutional infractions. Two studies (Brandt et al., 1997; Edens, Poythress, and Lilienfeld, 1999) found psychopathy to be associated with major institutional infractions, including aggressive acts, among adolescent offenders. In an adolescent detention setting, Cruise, Rogers, Neumann and Sewell (2000) reported that PCL: YV total scores were significantly correlated with nonviolent institutional problems including noncompliance, misconduct resulting in seclusion, and lack of treatment

progress. Similar results were offered by Murrie, Cornell, Kaplan, McConville, and Levy-Elkon (2004), who utilized the PCL: YV and three self-reports of psychopathy to examine its relationship with institutional behavior in incarcerated adolescents. Each measure of psychopathic traits was significantly predictive of institutional discipline referrals.

Some studies have found variable results, depending on the type of psychopathy instrument utilized. Two recent studies (Skeem & Cauffman, 2003; Spain, Douglas, Poythress, & Epstein, 2004), found that self-report measures predicted institutional infractions better than the traditional PCL: YV interview measure. Nonetheless, assessments of psychopathy seem to provide important information about young offenders' institutional behavior.

Psychopathy as a predictor of violence and recidivism among adolescents.

Consistent with the adult literature, psychopathic traits are significantly related to previous violence and are predictive of violent institutional behavior and violent recidivism (Forth et al., 1990). Investigations of the hypothesized developmental precursors of psychopathy have provided results comparable to those from adult studies of psychopathy. For example, Frick, O'Brien, Wootton, and McBurnett (1994) found that callous-unemotional (CU) traits were associated with earlier age of onset for violent offending. In another prospective study, children with these psychopathic features, in combination with conduct problems, demonstrated more severe and more instrumental aggression at one-year follow-up (Frick, Cornell, Barry, Bodin, & Dane, 2003).

The effects of psychopathic traits on propensity for violence are unique in the sense that psychopathy measures seem to be better indicators of violence than other externalizing problems. For example, Salekin et al. (2004a) demonstrated psychopathy's ability to postdict violent offenses, even after controlling for the combined effects of diagnoses of externalizing disorders (i.e., conduct disorder, oppositional-defiant disorder, and attention-deficit/hyperactivity disorder). Additionally, some evidence exists for the ability of psychopathy to predict violence after controlling for other psychosocial factors. Two studies (Gretton, Hare, & Catchpole, 2004; Vincent, Vitacco, Grisso, & Corrado, 2003) found that youth with high psychopathy ratings were more likely to have a violent offense prior to admission, continue to commit violent acts, and recidivate more quickly. These results were maintained, even after accounting for the young offenders' past criminal offenses, age of onset, and symptoms of conduct disorder.

One study indicated a significant relationship between psychopathy and violence intensity among adolescent sex offenders. Those rated high on psychopathic traits used more violence during the commission of their crimes than did nonpsychopathic sex offenders (Gretton, McBride, O'Shaughnessy, and Hare, 1997). Other prospective studies have demonstrated moderate to strong relationships between psychopathy and recidivism (both general and violent) among young offenders (Catchpole & Gretton, 2003; Corrado, Vincent, Hart, & Cohen, 2004). Corrado et al. noted that the future violence was explained mostly by the behavioral components of psychopathy, versus its interpersonal or affective traits.

In sum, psychopathy as a personality syndrome is a robust predictor of negative outcomes in adult offenders. Among youthful offenders, certain traits associated with psychopathy distinguish a subgroup of delinquents with more violent criminal histories, poorer institutional behavior, and a higher propensity for reoffending. As adolescents may not fully manifest all aspects of psychopathy until some later point in development, it is important to be prudent in examinations of youth, such that appropriate measures are utilized and conclusions are made with qualifications and caveats as necessary.

Several other practical and theoretical difficulties emerge with respect to assessing psychopathy among youth, particularly in institutional settings operating at full population capacity. Well-developed measures of psychopathy utilize a semi-structured interview format (e.g., PCL: YV), which is not always feasible as they require extensive training and staff resources. It may be fruitful to conduct research in youth offender populations by including assessments of specific personality dimensions and interpersonal styles linked to the construct of psychopathy and associated with the risk of recidivism and violence. For example, since the construct of psychopathy is multidimensional and comprised of several critical attributes, specifically poor empathy, and hostility/ aggression, these latter dimensions can be investigated themselves as to their contributions to juvenile delinquency. Furthermore, exploring the components of psychopathy, both attitudinal and interpersonal, allows treatment providers such as those in the TYC to better understand their population of youthful offenders and to appropriately tailor their interventions.

Lack of Empathy / Emotional Detachment

As discussed above, a fundamental dimension of psychopathy has to do with deficits in affective functioning (i.e., callousness or poor empathy). In fact, psychopathy has been referred to as an “empathy disorder” due to the emotional detachment and low perspective-taking ability that accompany the syndrome (Soderstrom, 2003). Moreover, developing empathy for one’s victim is recognized as one of the most central treatment goals in all juvenile offender treatment programs (Freeman-Longo, Bird, Stevenson, & Fiske, 1995; Lindsey, Carlozzi, & Eells, 2001). In fact, development of victim empathy is an integral component of the first phase in the TYC’s Basic Correctional Treatment curriculum. Although there appears to be a clear adherence to enhancing empathy in youthful offenders, the precise relationship “between lack of empathy and offending remains to be established” (Hilton, 1993, p. 290).

Traditionally, empathy was defined by either its emotional components (e.g., Stotland, 1969) or as the accurate perception of others (e.g., Hogan, 1969). Subsequent conceptualizations consider empathy to be multi-determined, comprised of a set of related measures including emotional and nonemotional components (Davis, 1983). A common definition of empathy is the tendency or ability to be vicariously aroused by the affective state of another person. This vicarious arousal often is assumed to engender sympathetic concern for the other, causing aversive arousal in the observer (labeled *personal* distress; Batson & Coke, 1981).

The capacity for concern for others is thought to be related to one’s tendency to engage in prosocial behavior. In their systematic review of the literature on empathy, Eisenberg and Miller (1987) discuss the role of empathy in affective terms as it is

associated with prosocial behavior. Specifically, empathic reactions appear to play an important function in the reduction and inhibition of aggressive, hostile, and antisocial actions toward others. Thus, an individual who vicariously experiences the negative reactions of others that occur because of their own aggressive behavior may be less inclined to continue their aggression or to aggress in future interactions. If empathy inhibits negative social behaviors that have hurtful effects on others, including aggressive behavior, lower levels of an individual's empathic capacity or its expression may be associated with development of antisocial behavior or externalizing psychopathology. Alternatively, adolescents engaging in delinquent behavior might be expected to exhibit less empathic responsiveness toward others.

Empathy components. Empathy is assessed through various means, including emotional and cognitive reactions to vignettes, experimental inductions, facial/gestural indexes, and self-report questionnaires (Miller & Eisenberg, 1988). To assess self-reported empathy, Davis (1983) built on a multidimensional conception in the construction of the Interpersonal Reactivity Index (IRI; Davis, 1980). The IRI was constructed with items believed to represent four components of empathy. Two scales include items representing widely held views of empathy as other-oriented. The perspective taking (PT) measure involves primarily nonemotional, or cognitive empathy, which includes the tendency of the respondent to adopt the psychological perspective of the other person. The empathic concern (EC) scale is a measure of emotional responsiveness, as it assesses the respondent's tendency to experience feelings of warmth, compassion, and concern for others. Another scale, personal distress (PD), most closely corresponds with the experience of anxiety, distress, and tension

vicariously experienced in crisis situations. Finally, the fantasy (FS) scale assesses the respondent's tendency to imagine themselves in the place of characters in books, movies, and plays, which according to research by Davis (1983) is more a measure of emotional than cognitive empathy.

Initial studies investigating the underlying factor structure of the IRI (Carey, Fox, & Spraggins, 1988; Thornton and Thornton, 1995) employed principal components analysis and concluded these four factors of the IRI as distinct and robust. However, as noted by Cliffordson (2001), the IRI subscales (except for PD) are highly intercorrelated and likely indicative of a higher-order empathy factor. To directly test this notion, Cliffordson (2000, 2002) utilized confirmatory factor analysis (CFA) to demonstrate the IRI assesses a global empathy factor. This latent empathy variable accounted for a significant amount of variance in both the PT and FS subscales but none of the variance in PD. These results were consistent with those of Wise and Cramer (1988) who also found one higher order empathy factor that did not include the PD items. In concordance with these results, items corresponding to the PD subscale contributed less to the overall empathy factor in the current study than did the other IRI scale items.

More recent research with a sample of violent adult offenders seemed to indicate poor reliability of the IRI subscales and also did not support the four-factor structure of the measure (Beven, O'Brien-Malone, & Hall, 2004). Thus, it appears that IRI empathy can be best conceptualized as a higher-order, uni-dimensional construct with both emotional and cognitive components, represented by lower-order IRI sub-scale score dimensions. As a correlate of negative outcomes, several empirical studies exist to demonstrate the relationship between empathy and delinquency and aggression.

Empathy, antisocial behavior, and aggression. Empirical evidence has demonstrated that decreased empathy is related to antisocial behavior. Researchers (Alexsic, 1976; Beven et al., 2004; Ellis, 1982; Hogan, 1969) have found significantly lower levels of self-reported empathy in delinquent adolescents and criminal adults compared with their nonoffending counterparts. In a study comparing adolescent offenders and controls, results indicated that offenders had lower IRI empathy, particularly in the Perspective Taking subscale score (Burke, 2001). This finding was interpreted to reflect offenders' diminished empathy related both to the cognitive ability to comprehend another perspective and to the affective experience of feeling compassion for others experiencing distress.

The relationship between empathy and aggression has been investigated in many studies. Cohen and Strayer (1996) found conduct-disordered youth to have lower empathy than comparison youth. In addition, these researchers demonstrated that empathy assessed through interview and self-report was inversely related to antisocial and aggressive attitudes among all youth tested. Curwen (2003) demonstrated a significant negative correlation between IRI empathy and self-reported hostility (as assessed by the Buss-Durkee Hostility Inventory) among male adolescent offenders.

Some researchers have attempted to use the IRI to differentiate between offender types. For example, Lindsey et al. (2001) demonstrated the only significant discriminator between sex offending delinquents, non-sex offending delinquents, and a control group of adolescents was the Personal Distress (PD) factor. Specifically, the delinquent groups were higher on PD, indicating a greater tendency to become emotionally reactive to intense situations.

The inverse relationship between empathy and antisocial behavior among adolescent offenders has not been supported by all research. For example, two studies (Book & Quinsey, 2004; Moriarty, Stough, Tidmarsh, Eger, & Dennison, 2001) have found IRI empathy to be the same for offenders and controls. In addition, Lee and Prentice (1988) found that delinquents actually had higher levels of empathy than their non-delinquent counterparts. A review of empathy research offered an explanation for such discrepant results (Miller & Eisenberg, 1988). These researchers concluded that empathy is negatively related to aggression and externalizing/antisocial behavior, but that correlations are usually small to moderate and investigations rely heavily upon questionnaire data. In addition, these researchers hypothesized that perhaps other personality factors affect the relationship between empathy and delinquent behavior, such as hostility. They refer to Dodge's (1980) theory of hostile attributions to explain how misperceptions of a situation may preclude empathic responding. Furthermore, discrepant results are not surprising, because most studies utilized IRI subscales as distinct variables rather than relying on the IRI as a measure of a uni-dimensional concept. Given the complexity of the relationship between empathy, aggression, and antisocial behavior, additional research is warranted.

Hostility and Aggression

With the increasing demands for assessing violence potential, it is important to understand and evaluate related constructs such as anger and hostility, despite the difficulty in determining the extent to which acts of violence are attributable to hostile attitudes or angry feelings. Physical and verbal aggression constitute one possible consequence of angry feelings; however, not all anger results in aggressive acts toward

others, and aggressive behaviors sometimes occur in the absence of emotional arousal (Furlong & Smith, 1994). However, the relationship between violent attitudes, anger, and violent behavior has been demonstrated empirically. Grisso, Davis, Vesselinov, Appelbaum, & Monahan (2000) found among adult psychiatric inpatients, violent thoughts significantly predicted future violence. In addition, these researchers found evidence for relationships between violent cognitions and other psychological constructs including psychopathy, anger, and impulsiveness.

A considerable amount of empirical study has been devoted to understanding the characterological nature of hostility and how it relates to aggression and violent behavior. Researchers (e.g., Cornell et al., 1996) have identified two primary categories of aggression: reactive, emotional aggression that is elicited by frustration, provocation, or perceived threat; and instrumental aggression that is self-initiated, purposeful, goal-directed, and predatory. Cornell et al. argued that instrumental aggression is more stable (trait-like) than is reactive aggression. Such a distinction has been helpful in understanding the link between factors such as hostility and aggression.

Dodge and Crick (1990) expanded on a social information-processing model of aggression to explain certain individuals' tendency to engage in reactive aggression. In this model, biased cognitions are linked to aggressive behavior. Specifically, given an ambiguous interpersonal interaction, the aggressive person would most likely misattribute hostile intent and retaliate aggressively against another's intended behavior. This hostile attribution bias seems to interfere with one's ability to inhibit hostile cognitive responses, regardless of the presence of disconfirming clues (Dodge &

Frame, 1982). This firmly-held bias, therefore, produces aggression that is reactive and impulsive (Dodge, 1991).

Hostility components. Buss and Durkee (1957) developed the Buss-Durkee Hostility Inventory (BDHI) because of an identified need for a multidimensional index of hostility, which they hypothesized was a precursor of aggression. The BDHI was one of the first psychometrically developed hostility scales, and it has been widely used in research studies. Original factor analytic work (Buss & Durkee, 1957) revealed two underlying factors of hostility: a) an emotional or cognitive component of hostility, and b) a motor component, or aggressive behavior, component of hostility. The first factor was comprised of items on the Resentment and Suspicion subscales, while the second factor included Assault, Indirect Hostility, Irritability, and Verbal Hostility. More recent research (Bushman, Cooper, & Lemke, 1991; Felsten, 1995; Siegman, Dembroski, & Ringel, 1987) has demonstrated a similar factor structure, often with different descriptors. Factor 1 has been referred to as “Neurotic” or “Experiential” hostility, and contains Resentment and Suspicion subscales. The second factor has been labeled “Expressive” or “Reactive” hostility, and usually includes items related to physical and verbal aggression, such as the Assault and Verbal Hostility subscales.

Some researchers disagree with the original two-factor structure of the BDHI. Ramanaiah, Conn, and Schill (1987) concluded that “the Buss-Durkee Inventory is not a good multidimensional measure of hostility,” based on the low content saturation between items on its respective subscales (p. 593). These researchers did not postulate about the true underlying structure of BDHI hostility; however, in a later article (Schill, Ramanaiah, & Conn, 1990), they conducted inter-item correlations and internal

consistency analysis, asserting that the BDHI is comprised of two components, overt and covert hostility. One study utilized measures of convergent and discriminant validity to assess the underlying hostility construct measured by the BDHI (Riley & Treiber, 1989). This study used principal components analysis to analyze components of the BDHI, compared with 11 other anger measures. Their results revealed three factors, including (a) anger experience/hostility, (b) verbal/adaptive anger expression, and (c) maladaptive/physical anger expression.

More recent research has attempted to clarify these issues related to the factor structure of the BDHI. Bryant and Smith (2001) conducted a large study involving the refinement of a short form questionnaire based on items from the BDHI. Their resulting 12 items constituted four factors they labeled Physical Aggression, Verbal Aggression, Anger, and Hostility. In the most recent study, based on a large sample of adult male sex offenders, the standard form of the BDHI was determined to be a uni-dimensional measure of general hostility, highlighting the need for further research on the nature of hostility in offender groups (Firestone, Nunes, Moulden, Broom, & Bradford, 2005). Noteworthy is that the hostility construct has been associated with a number of other factors involved in juvenile delinquency.

Hostility and impulsivity. Whether a person expresses hostility or acts out aggressively may depend on a more general degree of behavioral control. A body of literature is developing in order to understand the relationship between hostility/aggression and impulsivity. Some evidence exists to support the notion that “trait” or “experiential” hostility may be more important for understanding impulsive aggression than “reactive” aggression. According to Standford, Greve, and Dickens

(1995), impulsive aggression affects 20-25% of the general population and is characterized by attacks of anger inappropriate to the situation in which they occur, versus reactive aggression, which involves a response to provocation or threat. These researchers found that the Irritability scale of the BDHI was most strongly associated with self-reported impulsive aggression. Genetic research has provided support for an underlying phenotypic relationship between general irritability and impulsive aggression. In their large-scale twin study, Seroczynski, Bergeman, and Coccaro (1999) found that the prototypical form of aggression (i.e., physical) appears to share very little etiologically with impulsivity, whereas irritable aggression and impulsivity have much more overlapping genetic and environmental influences.

Hostility and violence. The hostile attribution bias theory proposed by Dodge and Crick (1990) suggests that internal schemas can either serve as potential catalysts or inhibitors of violent behavior. Therefore, individuals who consistently interpret others' behaviors as threatening are more likely to possess high levels of hostility, which potentially leads to violence (Dodge, Murphy, & Buchsbaum, 1984). Although some research has failed to support the ability of hostility scores on the BDHI to discriminate between violent and nonviolent individuals (Gunn & Gristwood, 1975; Romney & Syverson, 1984), other studies have demonstrated a positive relation between self-reported hostility, criminality, and violence. Early research by Edmunds and Kendrick (1980) demonstrated the BDHI total score discriminated between adult criminals and non-criminals. Similarly, another study used BDHI Overt, Covert, Assault, Indirect, Irritability, Resentment, and Suspicion scores to discriminate between assaultive adult males and their matched controls (Maiuro, Cahn, Vitaliano, Wagner, & Zegree, 1988).

Generally, most studies have demonstrated a relationship between hostility and violence, and a significant association between hostility and violence has been demonstrated among many types of offenders. For example, Selby (1984) found higher BDHI scores in adult criminals versus a sample of controls; results also indicated violent criminals were more hostile overall than nonviolent offenders. Lothstein and Jones (1978) reported youthful inmates who were repeatedly violent and assaultive scored significantly higher on measures of indirect and overt hostility. Dodge, Price, Bachorowski, and Newman (1990) demonstrated that a hostile attribution bias was correlated with the presence of conduct disorder and the number of violent crimes committed by adolescents, beyond the effects of race, intelligence, and socioeconomic status. Lang, Holden, Langevin, Pugh, and Wu (1987) used BDHI components in an attempt to discriminate between types of violent adult offenders (i.e., murderers, assaulters, armed robbers) and nonviolent controls. Surprisingly, they found that murderers reported less hostility overall but were extremely defensive. Violent history was a much better predictor of group membership.

Greenberg, Bradford, and Curry (1996) used measures of hostility among adult pedophiles to predict previous history of violence. They found those with higher ratings of BDHI Resentment and Suspicion had more convictions and violence than those rated low on these subscales. The Verbal, Negativism, and Irritability subscales of the BDHI have been used to discriminate between adult forensic patients deemed “dangerous” and those labeled “not dangerous” (Mullen & Reinehr, 1982). In another study with adult forensic patients, Swett and Hartz (1984) used BDHI total scores to predict violent acts,

and found a linear relationship between level of overall hostility (Low/Medium/High) and the frequency of violence.

Hostility, institutional infractions, and recidivism. There is limited evidence to support the use of hostility ratings to predict institutional behavior. Two studies provide some information about the relationship between poor institutional adjustment and hostility among adult offenders. An early study by Gunn and Gristwood (1975) found a correlation of $r = .45$ between the BDHI Assault scale and a violent behavioral index among adult British prisoners. Similarly, Kennedy and Kirchner (1976) reported that high scores on Assault, Indirect, Irritability, and Verbal hostility differentiated adult offenders with high frequencies of institutional infractions from those with few or no such violations. The relationship between self-reported hostility and future reoffending has been explored more extensively.

The BDHI has demonstrated efficacy with predictions of recidivism. Firestone et al. (1999) found that among adult sex offenders, higher Assault, Verbal, Resentment, Suspicion, and Total scores predicted general recidivism; Suspicion predicted violent recidivism. However, other variables were more useful in predicting recidivism, including past criminal history, PCL scores, and age. In another study of adult offenders, Sanders, Orling, Brown and Davis (1993) found a significant relationship between length of incarceration and BDHI scores.

In sum, research on the BDHI and its predictive ability among adult offenders is extensive and consistent for negative outcomes, including criminality, violence, and recidivism. However, there is a paucity of empirical evidence for the use of the BDHI among adolescents, particularly in assessing its utility as a predictive risk factor.

Additional research on the construct of hostility in adolescents would be helpful in elucidating the link between hostility, empathy, and offending behavior in youth.

Alcohol and Substance Use

A review of the literature seems to indicate that among adolescents, delinquent behavior and substance use are clearly interrelated. These problems are prevalent among youth and seem to co-occur through a linear relationship: as youths' substance use increases, so does their involvement in delinquent activities, and vice versa. Furthermore, delinquent youth begin using substances at earlier ages and are more involved in using substances, as compared to their nonoffending counterparts. Several studies (Aarons, Brown, Hough, Garland, & Wood, 2001; McClelland, Elkington, Teplin, & Abram, 2004; Otto, Greenstein, Johnson, & Friedman, 1992; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002) have found that at least half, and often as many as two-thirds, of adolescents in detention have one or more substance use disorders.

The exact nature of the relation between substance use and offending is quite complex. With respect to causal relations, some research (Loeber, 1988; Loeber, Stouthamer-Loeber, & White, 1999; Robins, 1980; Wagner, 1996) suggests that the emergence of delinquent, antisocial behavior precedes the development of substance use problems among substance-abusing delinquents, whereas other studies (Brook, Whiteman, Finch, & Cohen, 1996; Brooner, Schmidt, Felch, & Bigelow, 1992; Cottler, Price, Compton, & Mager, 1995; Kessler, Crum, Warner, Nelson, Schulenberg, & Anthony, 1997; and Ridenour et al., 2002) indicate the opposite, that substance use plays a mediating or direct causal role in offending. All studies seem to indicate significant overlap between substance use and delinquency. One comprehensive

longitudinal study of youth (Tubman, Gil, & Wagner, 2004) revealed that only the persistent combination of substance use and delinquency, as compared to the individual effects of each, was significantly predictive of future substance use and/or delinquency, even into adulthood.

Hussong, Curran, Moffitt, Caspi, and Carrig (2004) directly tested two possible hypotheses about the developmental relation between substance abuse and delinquency, particularly with respect to individual differences in the desistance of antisocial behavior over the lifespan. Their “launch” model predicts that early substance use affects the rate of decline of antisocial behavior in adulthood, whereas the “snare” hypothesis predicts that substance use has a short-term effect on antisocial behavior by altering its normal course. Through time-varying latent trajectory modeling, their results supported both models. Substance use in later adolescence predicted increased adult antisocial behavior with a sharper decline over time. Additionally, substance use predicted greater time-specific elevations in criminal behavior than was expected, operating as a “snare,” or risk factor, for offending.

A definitive causal relationship between substance use and offending remains to be identified. Other alternative explanations exist for their relationship. For example, it is possible that each develops in reciprocal relation to one another, with varying influences on each other over time. Some (Hammersley, Marsland, & Reid, 2003) posit the need for obtaining more precise information about substance use, as its predictive utility for future offending depends on the specific types of drugs used. Currently, many researchers believe that, perhaps, substance use and criminal behavior develop through a common causal trajectory, and that their shared variance is a manifestation of

a common latent factor, such as certain behavioral or temperamental characteristics (Patterson, Dishion, & Yoerger, 2000; White and Labouvie, 1994; Wilson, Rojas, Haapanen, Duxbury, & Steiner, 2001). Similarly, aggression, poor impulse control, and bullying have been identified as risk factors for future substance use (Dishion, Capaldi, Spraklen, & Li, 1995; Hawkins et al., 1992; Kellam, 1990).

Substance use and violence. As with general criminality and delinquency, the temporal sequences of substance use and violence perpetration are unclear. Utilizing a regression model, Weiner, Sussman, Sun, and Dent (2005) found that illicit substance use was a significant predictor of future violence among adolescents, but the inverse relationship was non-significant; violence did not predict future substance use. In contrast, some evidence exists for a reciprocal relationship between substance use (alcohol and marijuana) and violence among youth (Huang, White, Kosterman, Catalano, & Hawkins, 2001; White, Loeber, Stouthamer-Loeber, & Farrington, 1999). Weiner et al. (2004) utilized structural equation modeling to elucidate the relationships between substance use, aggression, and violence among adolescents. They found a mediating effect of drug use, in that higher hostility predicted violence both directly and indirectly through substance use. Similarly, substance use positively predicted violence. Consistent with Hussong et al.'s "snare" hypothesis, the pattern of the relationship between these variables shifted over time, including a decrease in the magnitude of their relationship at certain points during adolescent development.

Substance use and recidivism. In their meta-analysis of adolescent studies, Simourd and Andrews (1994) found a significant direct relationship between substance use and recidivism. This finding is consistent with several other studies (e.g., Benda,

Corwyn, & Toombs, 2001; Vermeiren, de Clippele, & Deboutte, 2000). However, results from Cottle, Lee, and Heilbrun (2001)'s more recent meta-analysis failed to support such a relationship among juveniles. An adult study (Grann, Langström, Tengström, & Kullgren, 1999) revealed the mediating effect of psychopathy on the relationship between substance use and violence: when psychopathy was controlled, the relationship was eliminated. Other researchers have discovered the importance of obtaining multiple sources of information about substance use when investigating its relationship with recidivism. Stoolmiller and Blechman (2005) found that a combination of parental and self-report of substance use was better at predicting adolescent recidivism than information from only one source. Additionally, just as substance use predicted future offending, denial of substance use on the part of the adolescent and/or parent was also significantly predictive of recidivism.

Family Variables as Risk Factors

Family variables, particularly parental difficulties (e.g., psychopathology, unemployment, substance use), appear to be risk factors for criminal behavior, recidivism, and poor treatment progress. Smith et al. (1997) found that individuals with five or more family risk factors were three times more likely to engage in serious delinquent acts than those with fewer of these problems. Family risk factors included: (a) low parent education level, (b) parental unemployment, (c) welfare family, (d) mother's first child during adolescence, (e) frequent changes of residence, (f) family members' criminality, (g) family members' substance abuse, (h) official record of child abuse, and (i) placement in foster care.

Parental Psychopathology and Substance Abuse

Loeber, Farrington, Stouthamer-Loeber, Moffitt, and Caspi (1998) found that parental psychopathology may serve as a risk factor for juvenile delinquency. Specifically, the following factors predicted delinquency: parents' stress, anxiety, depression, substance use problems, and unhappiness. The relationship between parental alcoholism and mental illness and children's violent behavior was examined in a study by McCord (1979). Results indicated there was no association between fathers' alcoholism and criminal conduct and their sons' later violence. In a study of male adoptees, Moffitt (1987) found a small and inconsistent relationship between parental mental illness and violence in children. Research indicates that parental attitudes favorable to behaviors such as alcohol use predict use of alcohol and drugs by youth (Peterson, Hawkins, Abbott, & Catalano, 1994).

Parental Criminality

Some evidence exists for familial patterns of criminality. Researchers (Farrington & Hawkins, 1991; Hawkins, Lishner, Jenson, & Catalano, 1987; Robins, 1966; Rutter, 1979) have established that individuals whose parents or close family members (i.e., siblings) commit crime are more likely to engage in crime themselves. Baker and Mednick (1984) found that men ages 18–23 with criminal fathers were 3.8 times more likely to have committed violent criminal acts than those with non-criminal fathers. There is some evidence to suggest the effects of parental criminality diminish as the child ages. For example, Moffitt (1987) found that adults (ages 29–52) with criminal parents were not much more likely to be arrested for a violent offense than those with non-criminal parents.

Additional studies have incorporated different manifestations of parental criminality as potential contributors to their children's delinquency. For example, Farrington (1991) found that children who witness or are victims of violence perpetrated by their parents are more likely to become aggressive and violent themselves in adolescence and early adulthood. Importantly, what may be critical in contributing to adolescents' antisocial behavior is the parental attitude toward deviance. Gorman-Smith, Tolan, Loeber, and Henry (1998) found parental antisocial attitudes to be highly related to youth offending. Little research has examined the impact of parental attitudes toward violence on children's behavior. However, one study showed that children who at age 10 had parents who were tolerant of violent behavior were more likely to report violent behavior by age 18 (Maguin et al., 1995). Overall, these studies indicate the importance of including more global assessments of antisocial attitudes and behavior when attempting to understand familial patterns of criminality, rather than solely relying on criminal histories of family members.

Child Maltreatment

Child abuse is recognized as an important risk factor for many psychological and behavioral problems, including delinquency and antisocial behavior. Researchers (Farrington, 1991; Luntz & Widom, 1994; Yoshikawa, 1994) have consistently found that delinquency is predicted by (a) emotional and physical abuse and (b) threats of such abuse. Evidence suggests that children who have been physically abused or neglected are more likely than others to commit violent crimes later in life (Smith & Thornberry, 1995; Widom, 1989; Zingraff, Leiter, Myers, & Johnson, 1993). Exposure to high levels of marital and family conflict also appears to increase the risk of later violence (Elliott,

1994; Farrington, 1989; Maguin et al., 1995; McCord, 1979). In order to better elucidate the relationship between being abused and committing later violence, Weiler and Widom (1996) conducted a prospective cohorts study and found that the predictive validity of childhood victimization may be mediated by specific personality characteristics. Results indicated that childhood abuse and/or neglect places persons, regardless of gender or ethnicity, at an increased risk for psychopathy. Childhood victimization by itself did not predict violence, thus indicating the importance of investigating relationships among variables.

In sum, the contribution of problematic familial patterns to adolescents' delinquency and violence is well-established; however, family difficulties (e.g., parental psychopathology, abuse) most likely represent correlates or predictors of negative outcomes, rather than causal factors. The intervening effects of personality characteristics, attitudes, and environmental variables underscore the importance of considering factors within the individual and in the broader social environment in addition to addressing family risk factors.

Other Risk Factors

Peer delinquency. Living in a poor and/or high-crime neighborhood is likely to create an environment in which adolescents often associate with youth engaging in criminal activity. Stouthamer-Loeber et al. (1993) found that peer delinquency emerged as a risk factor for criminal behavior, while the lack of peer deviance served to protect against criminality. More recently, Loeber et al. (1998) concluded that peer deviance may not increase the risk for criminal activity, but rather serves as an indicator of the adolescent's own delinquency. However, some support exists for the first explanation.

For instance, Keenan, Loeber, Zhang, Stouthamer-Loeber, and van Kammen (1995) found that exposure to deviant peers was significantly followed by the initiation of one's own delinquent behavior.

Involvement in a gang often provides a delinquent peer group, and research by Bjerregaard and Smith (1993) has demonstrated a higher prevalence of delinquency among gang members than adolescents unaffiliated with a gang. Gang membership may also be a risk factor for violence. Research (Esbensen & Huizinga, 1993; Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993) has provided evidence that rates of delinquency, particularly violent, are substantially higher during gang membership than either before or after membership. Regardless of the particular features of a youth's home neighborhood environment, the experience of incarceration may impact his risk for problematic behavior, as a result of opportunities to interact with and learn from other delinquent youth.

Age of Onset

Several researchers (Kazdin, 1990; Wiebush et al., 1998) argue age of onset is especially important because individuals with early delinquency have a higher likelihood of continuing this behavior into their late teens and adulthood. The age of onset for delinquency alone predicts future delinquent behavior. Patterson, Reid, and Dishion (1992) characterized teens with an early onset, generally before age 15, of delinquent behavior as "aggressive early starters." As a result of this distinction, researchers (e.g., Hoge, Andrews, & Leschied, 1996; Loeber et al., 1998) have highlighted the importance of incorporating age of onset in analyses aimed at predicting aggression, violence, and other antisocial behaviors.

Previous Criminality

Basic clinical theory has long posited that the best predictor of future violence is past violence (Barbaree, Seto, Langton, & Peacock, 2001; Harris, Rice, & Quinsey, 1993; Monahan, 1981). In their meta-analysis of actuarial risk instruments and empirical research, Wiebush et al. (1998) found a core set of risk factors related to criminality. They included the following: (a) number of prior arrests, and (b) frequency, variety, and breadth of antisocial behavior. Focusing on violent criminal behavior, Auffrey, Fritz, Lin, and Bistak (1999) found that the strongest risk factor for violence was past assaultive behavior. Those offenders with a known history of assaultive behavior were 54 times more likely than other offenders to have been subsequently arrested for a violent crime.

The strength of the previous findings above may be moderated by an important caveat. The ability of past delinquent behavior to predict future delinquency among adolescents may be somewhat limited by high base rates. For example, Lynam (1997) cautioned against the use of previous delinquency as a predictor. He argued that general delinquency in adolescence is almost normative, potentially resulting in high rates of false positives. Thus, predictions of future antisocial behavior could be inflated by prior delinquency, with other important risk factors overlooked that correlate with delinquency.

Finally, despite the dire consequences associated with the risk factors above, it is also the case that many individuals from high risk environments often prove to be resilient to negative influences, such as poor family functioning and harmful community surroundings. It is imperative, then, to address characteristics of the individual that increase risk for violence, aggression and other recidivism. Thus researchers and

clinicians incorporate a comprehensive review of a person's personality and behavioral profile into their attempts to predict future behavior.

Current Study

The current study is a comprehensive investigation of the interrelations between psychosocial, personality, and offense variables in a large sample of youthful male offenders. Review of the literature revealed a number of risk factors as correlates and predictors of negative outcomes in this population. In order to provide a thorough evaluation of an individual offender's behavior, particularly to make predictions about future behavior, all possible contributing factors might be investigated. However, incorporating all of the identified factors into one study may never be truly feasible. Therefore, a subset of empirically-supported personality and psychosocial risk factors was selected, as circumscribed by the TYC's inclusion of relevant variables in their routine evaluations of incarcerated youth. Specifically, the variables examined were: (a) race, (b) IQ, (c) substance abuse, (d) age of onset, (e) home approval status, (f) empathy, (g) hostility, (h) length of stay in the TYC, and (i) past criminality.

A limitation of previous research on risk factors and negative outcomes has involved investigations of variables in isolation, providing investigators with a limited understanding of the interrelations among them and such outcomes. For example, across numerous studies of offenders, researchers have identified lack of empathy and hostility as individual predictors of offending, violence, and recidivism, though very few studies have examined both at the same time (e.g., Curwen, 2003). However, these personality dispositions appear to relate similarly to negative outcomes, such as aggression (Lindsey et al., 2000; Lothstein & Jones, 1978). The current study utilized a

multiple regression approach in order to evaluate the influence of both of these personality variables.

Another limitation of previous research pertains to the level of measurement employed. To the extent that studies relied upon analysis of observed data without accounting for error of measurement, their results represent biased estimates of the particular relationships. Therefore, the current study also utilized a more sophisticated data analytic approach to delineate the relationships among these variables.

A modern method for representing theoretical constructs and analyzing the relationships among such constructs is confirmatory factor analysis (CFA; Bentler, 1995; Dunn, Everett, & Pickels, 1993; Hoyle, 1995; Reise, Waller, & Comrey, 1998). This approach relies on a multivariate approach to examine whether observed or manifest variables (MVs) are valid indicators of specific hypothetical constructs, or latent variables (LVs). Typically-employed MV approaches are less reliable because of the inclusion of measurement error within measures, which greatly influences the resulting correlations. An LV approach provides a solution to this problem by mathematically representing the common variance among two or more MVs, separate from their error variance. Thus, CFA offers precise parameter estimates adjusted for measurement error, and therefore provides a more accurate picture of the relations among constructs (Bentler, 1980, 1995).

Therefore, in an attempt to augment the multiple regression analysis at the manifest variable level, a latent variable regression approach (i.e., structural equation modeling) was also employed. The model shown in Figure 2 is a graphic representation of the relationships among the variables in the study. Finally, it is important to evaluate

the applicability of any model to different groups. With respect to the current literature review, some findings suggest that there may be differences in the links between constructs across samples. For example, there is disagreement about whether offenders actually experience less empathy than non-offenders, and whether the level and type of empathy varies across different offender types. Some studies have indicated empathy is reported at the same level for psychopaths and controls (Book & Quinsey, 2004), adolescent sex offenders and community volunteers (Moriarty et al., 2001), and incarcerated adult child molesters and controls (Marshall et al., 1993). Other studies (e.g., Burke, 2001) have found lower reported empathy levels for offenders as compared to controls. Some research has even demonstrated higher empathy among offenders (Cohen & Strayer, 1996; Lindsey et al., 2001). Despite the fact that many studies fail to acknowledge potential differences between groups, it is important to establish whether the structure of a particular construct and its utility as a predictor remain equivalent across groups.

Research Questions

1. One goal of the present study was to investigate whether the subscales of two self-report personality measures (BDHI and IRI) are valid indicators of their theoretical construct, or factor. This research question was addressed via CFA.
2. The current study posed a second research question to assess whether the interrelations between the variables would remain invariant across ethnic and treatment groups.

Hypotheses

1. The first hypothesis stated that certain risk factors, including empathy, hostility, low intelligence, age of onset, disapproved family status, and substance abuse would predict and account for a meaningful percentage of the variance in institutional behavior, as measured by the infractions variables. Furthermore, it was hypothesized that the predictive ability of these psychosocial and personality variables would exceed that of past criminal history. This hypothesis was tested through regression analyses and structural equation modeling (SEM).
2. It was also hypothesized that the identified risk factors would predict and account for a meaningful percentage of the variance in the offense outcomes (i.e., recidivism). It was expected that these variables would add incremental validity to past criminal history and institutional infractions in the prediction of recidivism. This hypothesis was addressed with regression analyses and incorporated into the SEM.

CHAPTER 2

METHOD

Design

A quasi-experimental design was employed to test the various hypotheses, utilizing 1) confirmatory factor analysis to indicate the underlying structure of the personality constructs as independent variables, and 2) multiple regression analyses, complemented by structural equation modeling, to reveal both the interrelations between the independent variables and their ability to predict outcomes. Independent variables were classified as either individual or family factors (see Table 1). Dependent variables included the number of institutional infractions and recidivism (see Table 2).

Project Approval

Approval for this study was received from the University of North Texas (UNT) Institutional Review Board (IRB) application on March 9, 2005. In addition, the Texas Youth Commission (TYC) granted final approval on August 4, 2004. Participants were treated in accordance with IRB approval, the TYC's research policy, and the ethical principles of the American Psychological Association (e.g., anonymity for participants was assured).

Participants

The general sample consisted of 900 young males included in a database of adjudicated offenders committed to seven Texas Youth Commission (TYC) residential correctional facilities. However, it is important to note that the number of cases available for specific analyses was variable. The facilities within the TYC detain young offenders with extensive delinquent histories and offer a variety of treatment, resocialization, and

educational programs. The participants had a mean age of 15.78 years ($SD = 1.17$) at the time of the assessment. Although the age range of adolescents confined in the TYC is technically limited to 10 to 17 years, a few of the participants may have been readmitted to the TYC as adults, due to juvenile parole violations. Therefore, the ages of participants ranged from 10.83 to 18.25 years. The mean age at first arrest was 14.39 ($SD = 1.70$).

The racial composition of the sample was 350 (38.9%) European American, 310 (34.4%) Latino American or Hispanic, 233 (25.9%) African American, and seven individuals identified as “other” (0.8%).

Specialized Treatment Programs

The youth selected for inclusion in the original dataset had been designated to five intensive, specialized treatment programs based on a needs assessment conducted during their initial processing at the TYC Orientation Unit in Marlin, Texas. Through this evaluation, the treatment needs are identified, rated, and ranked according to priority settings for each youth. In instances when the youth is assessed to have two or more equivalent needs, the TYC staffing committee or treatment team establishes a priority based on an evaluation of all assessment data, determining the principal problem that resulted in the act(s) for which the youth was committed to the TYC. In many cases, the treatment program to which the youth is assigned is directly related to his adjudicated offense (e.g., capital offender treatment for youth who commit qualifying offenses such as murder). Following identification of the principal issue requiring treatment, youth who enter specialized treatment are admitted into one of four treatment programs: 1) chemical dependency, 2) capital and serious offending, 3) mental health

treatment, 4) sexual offending, and 5) mental retardation. Youth in the first four treatment programs served as participants in the current study, as data were not provided on juvenile offenders with mental retardation.

Chemical dependency is defined according to the Diagnostic and Statistical Manual of Mental Disorders: Fourth Edition, Text Revision (DSM-IV-TR; APA, 2000). According to the most recent TYC population statistics (C. Jeffords, personal communication, October 5, 2005), chemically dependent youth comprise the largest group of offenders receiving specialized treatment (59.0%). The original sample included 347 youth (38.6% of the total sample) in the chemical dependency treatment program, a proportion slightly less than the overall TYC enrollment.

A large portion of the original sample includes youths with a history of sexual offending and often with a history of abuse ($n = 399$; 44.3%). This group of offenders comprises 7.4% of the total youth involved in specialized treatment within the TYC; therefore, these youth were significantly oversampled for this study. Offenders with a history of sex offenses are assigned to specialized treatment where they receive psychosexual education, cognitive-behavioral treatment, and relapse prevention programming.

Offenders classified as “with mental health impairment” are treated in residential treatment and/or stabilization units and represent the smallest subgroup of the overall original sample included in this study ($n = 57$; 6.3%), although they represent 26.1% of the total youth involved in specialized treatment programs in the TYC. The designation of “with mental health impairment” is based on an initial classification of the adolescents’ level of emotional disturbance as Low/No or High Mental Health Need. Those in the

High group receive intensive psychiatric treatment, based on the presence of serious deficits in adaptive functioning. Typical diagnoses for these youth include mood, psychotic, anxiety, and organic disorders.

The TYC offers a specialized treatment program for capital and serious violent offenders, who comprise approximately 5.0% of the total number of youth receiving specialized treatment. Capital offenders were oversampled for this study ($n = 79$, 8.8% of the original sample).

It is important to highlight that the actual sample sizes (i.e., n 's) for these specific program groups were variable for various analyses. In particular, for the SEM analyses, the n 's and total sample proportions were as follows: chemical dependency ($n = 260$, 61.9%), sex offending ($n = 65$, 15.5%), mental health ($n = 44$, 10.5%), and capital offending ($n = 51$, 12.1%).

Measures and Materials

Demographic Information

Several demographic variables were contained in the database, including each participant's: (a) birth date, (b) race, (c) the age at first arrest (i.e., "age of onset"), (d) number and type of offenses for which he has been adjudicated, (e) IQ [as measured by standardized intelligence tests such as the Test of Nonverbal Intelligence-Third Edition™ (TONI-3; Brown, Sherbenou, & Johnsen, 1997; copyrighted by PRO-ED, Austin, Texas), Wechsler Abbreviated Scale of Intelligence™ (WASI; Wechsler, 1999; copyrighted by Psychological Corporation, San Antonio, Texas), or the Kaufman Brief Intelligence Test™ (KBIT; Kaufman & Kaufman, 1990; copyrighted by AGS, Circle

Pines, MN], (f) substance abuse or dependence, and (g) average length of stay in the TYC.

Home Status

Specific criteria are applied by the TYC staff to determine whether a youth will be allowed to return to his/her home on completion of program requirements, or whether it is necessary to seek alternative living arrangements. Whenever possible, a youth's home is evaluated (or re-evaluated) at the end of each incarceration period.

Participants' home approval status was included for analysis as a variable with three levels: (a) approved, (b) approved with objections, and (c) disapproved. Homes are predominantly disapproved by the TYC for, but not limited to, the following reasons: (a) physical abuse, (b) sexual abuse, (c) absence of parent caretaker due to criminal incarceration or hospitalization, (d) serious physical/survival neglect, (e) legal termination of parental rights for youth under 18 years of age, (f) the youth is a sex offender and certain reinstatement criteria/requirements have not been met, or (g) the youth is an undocumented foreign national and proper documentation with Immigration and Naturalization Service (INS) has not been received by appropriate officials. Due to the prevalence of multiple contacts with the TYC, most youth had several home approval status ratings; therefore, an average home disapproval score was calculated and used in analyses.

Empathy

The Interpersonal Reactivity Index (IRI; Davis, 1980) is a 28-item self-report inventory consisting of four subscales, each assessing an aspect of the global concept of empathy. Respondents indicate on a Likert-type scale the extent to which each

statement describes them. Responses range from 0 (*does not describe me well*) to 4 (*describes me very well*). The Perspective-Taking (PT) scale is cognitive-based and evaluates the tendency to adopt the psychological viewpoint of another (e.g., *I sometimes try to understand my friends better by imagining how things look from their perspective.*). The Fantasy (FS) scale assesses the ability of a person to identify through imagination with the feelings and actions of fictitious characters in books, movies, and plays (e.g., *I really get involved with the feelings of the characters in a novel.*). The Personal Distress (PD) scale measures one's subjectively-experienced level of anxiety or discomfort in interpersonal situations (e.g., *I sometimes feel helpless when I am in the middle of a very emotional situation.*). Items on the Empathic Concern (EC) scale evaluate one's feelings of warmth, sympathy, compassion, and concern for unfortunate others (e.g., *I often have tender, concerned feelings for people less fortunate than me.*).

All four scales have satisfactory internal consistency (.71 to .78) and test-retest reliabilities (.62 to .81) (Davis, 1980; Wise & Cramer, 1988). Research indicates these scales possess a good degree of convergent and discriminant validity. Specifically, the EC scale has been found to be related to emotionality and a selfless concern for the welfare of others, but not to social competence or self-esteem. The PT scale has been shown to be related to interpersonal functioning and self-esteem, but not to emotionality (Davis, 1983). Recent factor analytic studies of the IRI (Cliffordson, 2000, 2002; Wise & Cramer, 1988) have indicated the IRI reflects one latent variable with both emotional and cognitive components, with other lower-order dimensions.

Hostility

The Buss-Durkee Hostility Inventory (BDHI; Buss and Durkee, 1957) is a 75-item self-report measure designed to evaluate various components of hostility. The authors asserted important differences exist in the manifestations of hostility, noting the major distinctions between overt, direct hostile expressions (e.g., physical or verbal aggression) and covert, indirect hostility (e.g., gossiping). In addition to a global score, the Buss-Durkee Hostility Inventory (BDHI) contains seven subscales to represent the various dimensions of hostility: *Assault*: Physical violence toward others. (e.g., *If somebody hits me first, I let him have it.*) *Indirect*: Roundabout and undirected aggressive behavior. (e.g., *I sometimes pout when I don't get my own way.*) *Irritability*: Readiness to explode at the slightest provocation. (e.g., *I sometimes carry a chip on my shoulder.*) *Negativism*: Oppositional behavior, usually directed toward authority. (e.g., *When people are bossy, I take my time just to show them.*) *Resentment*: Jealousy and hatred of others. (e.g., *At times I feel I get a raw deal out of life.*) *Suspicion*: Projection of hostility onto others. (e.g., *There are a number of people who seem to be jealous of me.*) *Verbal*: Negative affect expressed in style and content of speech. (e.g., *I often make threats I don't really mean to carry out.*)

Early factor analytic work by the authors revealed two stable underlying factors of the BDHI: Hostility and Aggressiveness. The Hostility factor included items of the Resentment and Suspicion subscales, while the Assault, Indirect, Irritability, and Verbal items loaded onto the Aggressiveness factor. Although more recent research (Bushman et al., 1991; Siegman et al., 1987) has supported this structure, the two factors appear

to share considerable variance, correlating as strongly as $r = .56$ (Felsten & Leitten, 1993), and therefore most likely reflect a higher order uni-dimensional model.

The BDHI has demonstrated adequate psychometric properties. Internal consistency has ranged from .70 to .96 (Biaggio, Supplee, & Curtis, 1981; Johnston, Rogers, & Searight, 1991). Test-retest reliability has been found to be good (.92; Moreno, Fuhriman, & Selby, 1993). Several validation studies (e.g., Greenberg et al., 1996; Lothstein & Jones, 1978; Mauro et al., 1988; Selby, 1984) report good construct validity, as elevated scores on the BDHI were associated with the presence of aggressive or violent behavior.

Dependent Measures

Institutional Infractions

Infractions included incidents of misconduct and/or violence within the institution. All TYC staff members are trained to document incidents when they occur; this information is immediately entered into the TYC computer system. Serious violations of institutional rules may result in a referral and/or admission to a secure housing unit (i.e., disciplinary segregation). Frequencies were available for the number of infractions per youth, in addition to information about whether he was referred or admitted to secure housing as the result of the incident. All assaults (on staff and other youth) were coded as violent infractions. All other infractions were considered nonviolent (e.g., noncompliance, destruction of property, gang activity, and self-referrals). For most analyses, an infraction composite was utilized, which include the sum of all infractions, both violent and nonviolent, referrals to security, and admissions to security.

Recidivism

Recidivism data included two dichotomous variables (yes/no): (a) arrest for a violent crime (e.g., murder, aggravated assault, aggravated sexual assault, sexual assault, aggravated robbery, and aggravated kidnapping) or any crime within one year of release, and (b) incarceration one to three years after release. These recidivism data were not available for 195 of the youth, as they were either released after a certain date designated by the TYC data managers (June 30, 2003), or transferred to the Texas Department of Corrections as adults without ever leaving secure residential placement.

CHAPTER 3

RESULTS

Data Screening / Sample Size Variations

Upon receipt of the data from the TYC, all variables were examined for missing values. The original dataset contained 987 participants, with 900 male, 50 females, and 37 whose gender was not coded and could not be identified. Due to their small sample size and the absence of necessary variables, female participants and those with an unidentified gender were excluded from all subsequent analyses. The remaining 900 cases were considered for further statistical analyses.

The initial data collection project spanned across seven TYC facilities and four treatment programs. Some variability in the data was expected, given that self-reports were distributed by multiple personnel, and data were entered by different staff at each facility. Prior to data analysis, some incomplete information was resolved through contact with the TYC's central office in Austin, Texas. However, due to some remaining missing data, the sample size varies quite considerably across variables. Also, the *n*'s for each subgroup are contained in the note for each statistical table.

Descriptive Data

Information was available regarding participants' referrals to juvenile court subsequent to each of their arrests. The mean age at first arrest was 14.39 ($SD = 1.70$). The overwhelming majority of participants in this study (96.4%) had been adjudicated previously, while only 3.6% of the participants were first-time offenders. On average, participants had a history of 6.54 referrals to the TYC ($SD = 5.09$). The majority of participants in the study (88.3%) had a history of committing at least one felony; most

had previously committed one or more crimes against property (67.7%), one or more public order offense (68.6%), and at least one crime against persons (63.6%).

Approximately half of the participants had committed at least one violent offense (51.2%); 30.7% had a history of adjudication for one or more drug offenses.

Each offender's "classifying offense" refers to the offense for which he was serving a sentence at the time of study participation. Information about the prevalence of four types of "classifying offenses" included the following: drug offenses (8.3%), crimes against persons (57.6%), public order offenses (9.4%), and property crimes (24.7%). The average length of stay per TYC commitment was 41.4 months ($SD = 15.77$).

Table 3 contains descriptive information on the independent and dependent variables for the overall sample. Participants differed significantly across nearly all of these variables according to treatment program, so these data are also presented individually by group in Table 5. These group differences will be discussed further as part of the analyses for hypotheses 1 and 2.

Research Question #1

The first research question sought to assess whether the subscales of the two personality measures are valid indicators of their theoretical construct, or factor. This question was tested with a confirmatory factor analysis (CFA) procedure using subscale scores as indicators for the factors (see Figure 1). Several previous SEM studies (Bagozzi & Heatherton, 1994; Byrne, 1988; Greenbaum & Dedrick, 1998; Marsh, 1994; Marsh & O'Neill, 1984; Marsh, Smith, & Barnes, 1985) have utilized such scale composites instead of all single items/scales as indicators for the LVs. These

composites, or parcels: (a) tend to be more reliable and valid indicators of LVs, (b) are less skewed and kurtotic than individual items, and (c) improve the ratio of estimated parameters to subjects by reducing the number of parameters to be estimated (Bagozzi & Heatherton, 1994; Marsh, 1994).

Prior to conducting the CFA, the normality of the data was examined. Notably, minimal skew (-0.61 and -0.11) and kurtosis (0.11 and -0.62) were observed for the IRI and BDHI variables, respectively. Furthermore, as recommended by Bentler (1995), a comparison of non-robust and robust parameter estimates provided by the EQS program indicated neither skew nor kurtosis altered the results. The effectiveness of the CFA model was tested in terms of whether the model reproduced the observed data (absolute index), and how the hypothesized model fit compared to a null one (relative index). Extensive research by Hu and Bentler (1999) has demonstrated that two indices are preferred for assessing both types of fit: 1) the standardized root mean square (SRMR) index and the comparative fit index (CFI). Adequate fit is apparent when the SRMR is $\leq .08$ and when the CFI is approximately $\geq .90$. The root mean square error of approximation (RMSEA) should be $\leq .08$, as an indicator of how well the model parsimoniously fits the data in this population, given the number of free parameters (Steiger, 1990).

In the current study, CFA was utilized to determine whether the subscales of the BDHI and IRI are valid indicators of their intended underlying constructs, hostility and empathy. The maximum likelihood procedure was used for the CFA analysis with EQS for Windows software (version 5.7b; Bentler, 1998). Presented in Table 4, the results of the CFA provided good support for regarding each measure as a uni-dimensional

construct ($CFI = .940$, $SRMR = .066$, $RMSEA = .079$); thus, the subscales of the IRI are indicators for a latent variable “empathy,” and the BDHI subscales are indicative of a latent variable of “hostility.” The BDHI and IRI factors were not significantly correlated ($r = -0.04$).

Research Question #2

The second research question explored whether the interrelations between the variables would remain invariant across ethnic and offender groups. Furthermore, significant differences between groups would indicate the need for separate prediction models to maximize the variance explained. All of the predictor variables from Table 1 were entered into a multivariate analysis of variance (MANOVA), first with ethnicity as an independent variable. Results indicated there were significant mean differences between the racial groups on only two variables: IQ ($F = 4.62$, $p = .003$) and home disapproval ($F = 4.89$, $p = .002$). Mean age of first arrest (age of onset), length of stay, BDHI scores, and IRI scores were not significantly different. The *Box's M* test can be used as part of the MANOVA to assess the degree of similarity of variance-covariance matrices for the various in-between group comparisons for the dependent variables. The results of this test indicated that the racial groups did not have significantly different covariance matrices (*Box's M* = 36.63, $F = 1.20$, $df1 = 30$, $df2 = 432694.2$, $sign. = 0.21$), indicating it was reasonable to pool cases across groups.

A second MANOVA included treatment group as an independent variable. These groups did differ significantly overall ($F = 21.55$, $p < .001$). Specifically, the treatment groups differed on all of the predictor variables except for previous felony adjudications. Further analysis revealed the treatment groups also differed significantly with respect to

the variance-covariance matrices of the predictor variables ($Box's M = 239.40$, $F = 5.11$, $df1 = 45$, $df2 = 41598.79$, $sign. < .001$). Thus, separate regression analyses were conducted for each treatment group for Hypotheses 1 and 2. Given the limited sample size of most of the program groups, the SEM analyses were only conducted on the total sample and the chemical dependency program sample.

Substance Use

Based on the literature review, substance use is considered an important risk factor for populations of youthful offenders. Thus, the original proposed model (see Figure 2) included substance use as an independent variable, with three values in accordance with the TYC's determination of a youth's chemical dependency treatment need: a) no substance use, b) substance abuse, and c) substance dependence. Initially, an attempt was made to incorporate substance use as a manifest variable into the SEM, but this was unsuccessful. The substance use variable did significantly correlate with all other predictors (see Table 6). Furthermore, the significant MANOVA results provided support for the supposition that substance use plays an important role in understanding youthful offenders.

Treatment Group Differences

Chemically dependent youth differed significantly from the offenders in the other specialized treatment programs on the psychosocial variables ($F = 21.78$, $p < .001$). Table 5 includes post-hoc analyses, including effect sizes for each analysis. Chemically dependent offenders had lower self-reported hostility than youth in mental health treatment and sex offenders but not capital offenders. Similarly, youth in chemical dependency treatment reported lower empathy than all other treatment groups. Youth in

chemical dependency treatment had better home approval ratings overall than offenders in the mental health and sex offending treatment groups, but their home approval status was not significantly different from capital offenders. Chemically dependent youth also were slightly older at first arrest than sex offenders, and slightly older at the time of participation in this project than sex offenders and youth in mental health treatment. Correlations between the independent variables for the chemical dependency treatment group are presented in Table 7.

Hypotheses #1 and #2

It was predicted that certain psychosocial and personality variables, including low empathy, hostility, age of onset, disapproved family status, intelligence, and substance abuse would account for a meaningful percentage of the variance in infractions and the offense outcomes, as indicated by regression analyses and structural equation modeling (SEM). An infractions composite was utilized for these analyses (i.e., summative index of violent infractions, nonviolent infractions, and referrals and admissions to secure housing). Tables 6 and 7 include the intercorrelations of the predictor variables. To assess the direct relationship between past behavior and future behavior, and to evaluate the strength of past behavior relative to the other psychosocial and personality predictors, correlation and regression analyses were conducted (see Tables 8-16). Specifically, the goal was to address whether the predictive utility of other variables exceeds that of past behavior in predicting poor institutional adjustment and recidivism. Furthermore, it was important to evaluate the extent to which length of stay contributed to infractions.

First, predictor variables were correlated with the outcome of interest for the total and program samples (see Tables 8-13). Next, hierarchical linear or logistic regression analyses were conducted to determine the predictive utility of the independent variables (see Tables 14-16). Variables that were significantly correlated with the outcome were entered into the regression analysis. For all regression equations, past criminal history variables and/or length of stay entered at Step 1, in order to test the notion that past behavior may be the best predictor of future behavior and to attempt to explain the outcomes as more than the effects of length of stay in the TYC. The psychosocial and personality variables were added to the regression equation at Step 2, following criminal history variables and length of stay, in order to ascertain their ability to add incremental validity to these background variables in the prediction of the outcomes. A summary of the significant predictors is provided in Table 17. Group differences on the infraction and recidivism outcomes are also discussed.

Predictors of Infractions

Overall Sample

It was predicted that certain psychosocial and personality variables, including empathy, hostility, home approval status, intelligence, age of onset, and substance abuse would account for a meaningful percentage of the variance in infractions. Table 8 includes the correlations between these variables and infractions, as well as their intercorrelations for the total sample. Past criminal history variables were also included in the analyses. Because past criminal behavior variables were not correlated with infractions for the overall sample, length of stay entered the regression equation at Step 1, followed by BDHI hostility, IRI empathy, IQ, home disapproval, and age of onset at

Step 2 (see Table 14). Results indicated several of the psychosocial and personality variables contributed significantly to the prediction of infractions, even when accounting for length of stay. Specifically, BDHI hostility, age of onset, and home disapproval remained significant predictors of the infraction composite for the overall sample, collectively accounting for 20% of its variance.

Treatment Group Comparisons

Correlations by program groups: Infractions. Participants in the specialized treatment programs differed significantly on the total number of infractions and security admissions and referrals ($F = 40.51, p < .001$). Sex offenders ($M = 281.56, SD = 456.64$) and those in mental health treatment ($M = 367.75, SD = 379.19$) had more infractions than both the chemically dependent group ($M = 44.39, SD = 131.70$) and capital offenders ($M = 66.96, SD = 73.49$). As shown in Table 9, correlational analyses were conducted separately for each specialized treatment group. Length of stay was significantly predictive of infractions across treatment groups. For sex offenders, BDHI hostility, IQ, age of onset, and past crimes (total and violent) were also related to the infraction composite. Among the chemical dependency group, BDHI hostility and past violent crimes emerged as significant correlates. Age of onset was the only other variable significantly correlated with infractions for youth in mental health treatment. No other variables were significant for capital offenders.

Hierarchical linear regression by program groups: Infractions. Hierarchical regression included length of stay and/or past criminal history at Step 1, followed by the other predictors for each treatment group (see Table 14). BDHI hostility remained a significant predictor for both the sex offender and chemical dependency groups, even

after accounting for both length of stay and past violent crimes. Age of onset continued to add to the prediction of infractions among the sex offending group, with a total of 22% of variance explained. Among those in mental health treatment, length of stay was the only significant predictor of the infractions composite, accounting for 22% of its variance. Length of stay accounted for the most variance in infractions for the capital offenders group ($R^2 = 0.25$); no other variables emerged as significant predictors.

Predictors of Violence or Arrest at One-year Follow-up

Overall Sample

As shown in Table 10, all of the criminal history variables were significantly correlated with this recidivism variable, as were institutional infractions. Additionally, IRI empathy, home status, and age of onset also emerged as significant predictors of this outcome. These variables were entered into hierarchical logistic regression analyses, with the dichotomous (present/absent) recidivism factor as the dependent variable. As shown in Table 15, results indicated IRI, home disapproval, and age of onset contributed significantly to the prediction of arrest at one-year follow-up, even after accounting for past crimes and institutional infractions ($R^2 = 0.27$).

Treatment Group Comparisons

Chi-square analysis revealed significant group differences ($X^2 = 10.89, p = .01$) between the mental health group and capital offenders, with respect to the percentage who were arrested or committed violence within one year of follow-up (50.9% mental health vs. 23.1% capital offenders). Sex offenders (34.1%) and chemically dependent youth (38.0%) recidivated at equal proportions within one year.

Correlations by program groups: Recidivism at one year. Correlations between the predictors and this offense outcome are presented by treatment group in Table 11. Infractions and past criminal history were significant correlates for the sex offender and chemically dependent groups, as was IRI empathy. Home disapproval was correlated with recidivism for those in sex offender and mental health treatment. For capital offenders, BDHI was the only significant correlate for arrest at one-year follow-up.

Hierarchical logistic regression by program groups: Recidivism at one year. These analyses were conducted separately by treatment group (see Table 15). For the sex offenders, IRI empathy and home disapproval predicted violence and/or arrest within one year after accounting for infractions; these variables remained significant predictors even after past crimes were added to the regression analysis at Step 1 ($R^2 = 0.40$). Infractions, past felonies, and length of stay were added individually and in combination to the logistic regression for the chemical dependency group; the IRI continued to add significantly to the prediction of recidivism, accounting for 39% of the variance. Home disapproval was the only contributing variable for the mental health treatment group; it accounted for 49% of the variance. BDHI hostility emerged as the sole predictor of recidivism for capital offenders ($R^2 = 0.13$).

Predictors of Re-incarceration at One- to Three-year Follow-up

Overall Sample

Similar to the prediction of violence and/or arrest within one year, the criminal history variables (except past felonies) and infractions were significantly correlated to this recidivism outcome (see Table 12). The other psychosocial and personality variables included the IRI, IQ, and age of onset, although their correlations were small.

In assessing the entire sample, past crimes and the infraction composite entered the hierarchical logistic regression equation at Step 1 (see Table 16). Initial analyses (not presented in Tables) indicated that the IRI was a significant predictor for re-incarceration, even when these variables were controlled. Past violent crimes were then added at Step 1 (due to the strength of its correlation with the outcome), and age of onset significantly contributed to the prediction at Step 2. Importantly, when violent infractions were added to violent crimes in the regression at Step 1, no variable significantly accounted for any additional variance in the incarceration factor. The total variance explained in this outcome was only 9%.

Treatment Group Comparisons

Significant group differences emerged on this recidivism outcome ($X^2 = 32.58$, $p < .001$). Significantly more youth in mental health treatment were re-incarcerated within one to three years (61.8%) than capital offenders (15.4%); 34.5% of sex offenders and 44.1% of those in chemical dependency treatment were re-incarcerated.

Correlations by program groups: Re-incarceration. Despite the group mean differences in recidivism rates, as shown in Table 5, correlation analyses revealed two variables that contributed similarly for all treatment groups: infractions and length of stay.

Hierarchical logistic regression by program groups: Re-incarceration. Variables with significant correlations were entered into hierarchical regression analyses, with past crimes, infractions, and length of stay entering at Step 1, when appropriate, for each group (see Table 16). For youth in mental health treatment and capital offenders, length of stay was the only significant predictor, accounting for 14% of the variance for

each group. Among youth in chemical dependency treatment, infractions were the only significant predictor, accounting for only 6% of the variance. For sex offenders, past violent crimes was the strongest predictor, explaining 10% of the variance in the reincarceration outcome.

Structural Equation Modeling (SEM)

The original proposal involved an investigation of the subset of empirically-supported risk factors through latent variable modeling. To maximize power, the intention was to rely heavily on structural equation modeling (SEM) for all analyses. SEM improves upon other types of statistical analyses (e.g., regression, MANOVA) by taking into account the modeling of multiple latent independent variables measured by multiple indicators and their intercorrelations and measurement error. Unfortunately, SEM became secondary to the other types of analyses when significant problems with the data became apparent. Several of the independent variables are ordinal in nature model (e.g., ethnicity, substance use), which often resulted in too few values per cell for inclusion in the model. Additionally, as discussed, the valid n (listwise) was too low for the inclusion of some of the variables of interest (e.g., length of stay). Most importantly, linear dependency was another contributor to the inability to produce a model with all of the variables. That is, when a value of one variable can be used to determine the value of other variables, singularity can occur in the covariance matrix used for the SEM analysis, and thus, eliminates the possibility of coherent covariance structure analyses.

Notwithstanding these difficulties, it was possible to produce a SEM that provided a comprehensive analysis of the interrelations between most of the salient variables. The manifest and latent variables entered into the model are presented in Figure 3. The

manifest variables included the psychosocial measures of IQ, home disapproval status, and age of onset and entered the model as direct predictors of infractions and recidivism. The hostility and empathy variables were used to model the latent personality variables and were also utilized as predictor variables of infractions and recidivism. Finally, the separate infractions and recidivism variables, respectively, were used as indicators for infraction and recidivism latent variables. Infractions entered the model as a latent indicator of institutional maladjustment and served as a direct predictor of future criminal offending (i.e., recidivism latent variable).

Consistent with Hu and Bentler (1999)'s recommendations, the CFI, SRMR, and RMSEA were utilized to assess the fit of the applied model. Results indicated acceptable fit to the data, $CFI = .99$, $SRMR = .059$, $RMSEA = .119$. The model accounted for 17% of the variance in the infraction factor and 33% of the variance in the recidivism factor. All factor loadings and structured coefficients were significant with the exception of the direct effects of home approval, age of onset, and IQ on recidivism. However, these variables significantly predicted institutional behavior, which had a strong effect on future offending. Thus, institutional behavior seemed to mediate the effects of these psychosocial variables on recidivism.

The personality variables of empathy and hostility emerged as stronger predictors of the outcomes than the psychosocial factors, with specific effects on the type of outcome. Specifically, hostility was much more strongly predictive of infractions than recidivism; however, similar to the psychosocial variables, its link to recidivism was mediated through the infractions latent variable. The empathy latent variable directly

predicted future offending, in that lower empathy was predictive of increased recidivism, but empathy was not meaningfully linked to institutional behavior.

Due to the group differences between offenders in chemical dependency treatment and the other treatment programs, the SEM was re-tested with this subgroup. The manifest and latent variables entered into the model were identical to those included in the SEM for the entire sample (see Table 7 for their intercorrelations). Results indicated acceptable fit to the data, $CFI = .99$, $SRMR = .060$. The model accounted for slightly less (12%) of the variance in the infraction factor but explained 62% of the variance in the recidivism factor (see Figure 4). All factor loadings and structural coefficients were significant. Compared to the total sample SEM results, hostility exhibited less of a role in predicting infractions, while intelligence and empathy played a stronger role for adolescents in the substance abuse treatment program in predicting the recidivism latent variable.

Summary and Comparison of Results from Regressions and SEM

The results of the SEM were largely consistent with the regression analyses (see Table 17 for a summary). In both analyses, BDHI hostility, home disapproval, and age of onset contributed significantly to the infractions composite. In the SEM, intelligence was predictive of infractions, which was consistent with correlational analysis. Regression analysis expanded upon the understanding of the role of intelligence in predicting institutional maladjustment. Specifically, when length of stay, hostility, home disapproval, and age of onset were accounted for, IQ did not add to the prediction of infractions. In the SEM, empathy and infractions were the most predictive of the recidivism factor. In regression analyses, empathy did not predict infractions; however,

hostility, age of onset, and past crimes did, even after accounting for the effects of length of stay.

In the regression analyses, the recidivism variables were considered separately. In accordance with the SEM results, empathy was a strong predictor of violence and/or arrest within one year, but only for the largest subgroups, sex offenders and chemically dependent youth. Similarly, infractions were the strongest predictor of recidivism in the SEM and emerged as an important variable in the regressions. Infractions remained a significant predictor for the recidivism of sex offenders and chemically dependent youth, and served as the only predictor for their re-incarceration status at one- to three-year follow-up. Home disapproval did not exhibit any direct effect on recidivism in the SEM; however, through regression analysis, this variable demonstrated its predictive ability for arrest within one year for the sex offending and mental health treatment groups. Hostility seemed to have no direct effect on recidivism in the SEM, but regression results demonstrated its ability to exclusively predict arrest within one year for the capital offending group. Finally, length of stay and past crimes demonstrated powerful predictive utility for recidivism through regression analyses but were not included in the SEM. In fact, for two of the treatment groups (mental health and capital offending), length of stay was the only predictor of re-incarceration within one to three years after release. However, the latter findings should be treated with great caution, given the limited size of these two program groups ($n = 44$ and $n = 51$, respectively).

CHAPTER 4

DISCUSSION

According to a recent census report provided by the Office of Juvenile Justice and Delinquency Prevention (2003), there are approximately 96,655 youth currently incarcerated in the United States. However, in efforts to reduce overall crime rates and to ensure effective sanctions and interventions, policymakers have expanded the available alternatives to incarceration for juvenile offenders. As asserted by Bonta (1996), the level of correction, treatment, or rehabilitation for each young offender should be matched with his or her risk of reoffending. In this way, the most intensive services should be provided for the offenders at highest risk for recidivism.

According to this view, incarceration may appear to be the only suitable option for chronic and/or serious offenders. In making determinations of “chronic” or “serious” offenders, available decision models vary quite drastically. For example, some decision makers limit their inquiries to indicators of past behavior; others may choose to incorporate a wide range of empirically-supported variables known to predict recidivism. While many continue to believe past behavior is the best predictor of future behavior, empirical evidence exists for many other important psychosocial and personality factors to be considered when determining a young offender’s need for institutional placement and risk for recidivism.

In accordance with the treatment implications highlighted by Wiebush et al. (1998), this study sought to identify important risk factors for institutional misconduct and recidivism. These factors, chosen by the TYC and included in the archival dataset for analysis, were supported by the literature review as risk factors for juvenile

offending. Unfortunately, broader community risk variables were not available for inclusion in the study. However, other critical variables were accounted for on the individual and family levels.

Specifically, it was possible to include variables both at an observed or manifest level (e.g., home disapproval status) and those represented at a latent level in terms of theoretical constructs or factors (e.g., empathy, hostility). Criminal history variables were included, both to enhance the prediction models and to directly assess whether past behavior is in fact the best predictor of future behavior, whereas empathy and hostility constructs provided information about dynamic individual factors potentially amenable to treatment.

Specific characteristics of the offender population, such as empathy and hostility, are of interest to juvenile justice policymakers, correctional staff, and treatment providers. To reduce the probability that these offenders will recidivate, many states have implemented intensive and specialized treatment programs in their juvenile correctional facilities. Offenders vary with respect to their adjustment to the correctional environment, as well as their propensity for reoffending. Thus, the current study also developed prediction models for each of the different treatment programs to examine whether the offenders within these specialized programs would differ with respect to the psychosocial and personality variables, placing them at varying levels of risk for poor institutional behavior and recidivism.

A multivariate approach allows the investigator to incorporate numerous variables of interest into a comprehensive analysis. Often, research relies on the predictive utility of variables in isolation, without accounting for the error of

measurement. Therefore, in addition to examining a variety of factors within the sample of juvenile offenders, this study employed a latent variable approach to provide unbiased estimates of the relationships between important risk factors and negative outcomes in this population. The latent variable regression approach, structural equation modeling (SEM), provided a comprehensive analysis of the interrelations between the most salient variables and demonstrated their predictive utility for the outcomes of interest, both for the overall sample and for a subgroup of offenders in chemical dependency treatment. Because the other program samples were too small for conducting SEM, this study relied on hierarchical regression analyses to identify important predictors for the other specialized treatment programs. Overall, concordance was demonstrated between the regression results and information provided by the SEM.

Efficacy of Personality Measures / Research Question #1 Answered

The first research question sought to determine whether data from the self-report measures of empathy (Interpersonal Reactivity Index; IRI) and hostility (Buss-Durkee Hostility Inventory; BDHI) provided valid indications of their theoretical constructs. Confirmatory factor analysis revealed that the IRI and BDHI reflected separate unidimensional constructs of empathy and hostility, respectively.

Empathy

The distribution of the IRI total score was adequately normal, and the IRI had satisfactory internal consistency (Cronbach's $\alpha = .77$). The results from the CFA matched those of both Cliffordson (2001 and 2002) and Wise and Cramer (1988), who demonstrated one underlying latent variable of empathy for the IRI measure. The uni-

dimensionality of empathy as assessed by the IRI does not correspond with the intentions of the original author, who developed the measure to assess four distinct components of empathy: perspective taking, empathic concern, personal distress, and fantasy (Davis, 1983). In contrast, these four components appear to reflect a single higher-order construct. Therefore, for the present study, the IRI total score was used as a measure of general empathy in the regression analyses.

As an important element of the construct of psychopathy, decreased empathy could be expected to correlate with increased hostility. Additionally, as noted by Eisenberg and Miller (1987), increased empathy toward others appears to reduce aggressive and hostile actions. Given this hypothesized inverse relationship between empathy and hostility, a moderate negative correlation between the IRI and BDHI was expected. Results indicated these variables were not related at all for the overall sample ($r = -0.04$); however, empathy and hostility had a small but significant relationship among the chemically dependent group ($r = -.15$). Notably, the empathy and hostility variables were important predictors of different types of outcomes; these results will be discussed in later sections.

Hostility

BDHI hostility scores demonstrated acceptable indicators of normality in the total sample. Additionally, the BDHI had good internal consistency, with Cronbach's $\alpha = .87$. Some researchers utilized a two-factor model of BDHI hostility, with one generally covert or "neurotic" component, and one overt or "expressive" component. In this study, however, CFA results determined that the BDHI could be represented by a single higher-order hostility factor. This result was consistent with the most recent factor

analytic work with the BDHI by Firestone et al. (2005) who also found the BDHI to assess a uni-dimensional construct of hostility. The predictive utility of hostility corresponded to the hypotheses to some degree; these results will be discussed in later sections.

Group Differences in Risk Models / Addressing Research Question #2

Personality Measure Group Differences

Offenders can be stratified by risk level, offense type, or various background characteristics (e.g., ethnicity). Results can be divergent even when studies distinguish between groups across the same factors. The current study investigated group differences across dimensions that were most meaningful, given the sample and the available outcome data. For example, based on the results of Holland et al. (1983), differences in the hostility measure across racial groups were anticipated. However, results indicated that the uni-dimensional structures of both the BDHI and the IRI were not significantly different by race.

While analysis of variance results indicated that it was possible to pool subjects across race, results of the MANOVAs indicated a need to evaluate the TYC program groups separately. Significant correlations were found between the original substance use variable and the other predictors, including the hostility and empathy measures. Substance use did not have differential relations with the study variables as a function of racial group. Youth in the sex offender group reported the most hostility overall, whereas participants in the capital offending treatment program reported the highest empathy as compared to the other groups. Several potential explanations exist for this finding. These results may reflect the fact that these two groups had committed

significantly more violent crimes than those in mental health or chemical dependency treatment. In some studies, hostility is highly associated with violence, and although perhaps counterintuitive, higher empathy has also been found to be related to violence, particularly the Personal Distress component among sex offenders. As will be discussed in later sections, a core component of the treatment for capital offending youth is empathy skills training. Thus, their self-reported empathy may reflect the effects of being involved in an intensive treatment program that emphasizes one's identification with the feelings of others. These results should be interpreted with caution, however, as program group membership accounted for only 5% of the variance in BDHI hostility and 23% of the variance in IRI empathy.

Psychosocial Measure Group Differences

Substance use is considered a robust correlate of delinquency and negative outcomes, including recidivism. In dealing with substance use as a relatively normative experience among this population (i.e., 61.4% of the original sample had an identified need for substance use treatment), it seemed important to incorporate it as an independent variable important to institutional maladjustment and recidivism. Thus, the chemical dependency group was assessed separately as a way to evaluate the effects of substance use in this high-risk group.

Other than their level of intelligence, which was similar to participants in the other treatment groups, chemically dependent youth were significantly different from the other groups on all other psychosocial variables. Youth in chemical dependency treatment were older when first arrested than those in sex offending treatment. Their homes were more likely to be approved for their return than those of the sex offenders and youth

with mental health concerns. Chemically dependent youth had more total past crimes than sex offender and capital offenders, and fewer violent crimes than both of these groups. For most variables, program group membership accounted for only a small proportion of the variance, with most effect sizes below 0.20, with the most variance explained for home disapproval rating ($\eta^2 = 0.26$), IRI empathy ($\eta^2 = 0.23$), average length of stay ($\eta^2 = 0.22$), and past violent crimes ($\eta^2 = 0.20$). Although separate prediction models were tested for the group of youth with diagnoses of substance dependence, effect sizes indicated their differences as compared to the other program groups may have limited clinical significance.

Predicting Institutional Behavior

According to Kraemer et al. (1997), correlates are variables that occur concurrently with negative outcomes, whereas those that reliably predict negative outcomes can be described as predictive risk factors. Each personality and psychosocial variable was evaluated as a correlate, and then if significant, entered into a regression equation, following indicators of past behavior and length of stay. Also, the SEM results were able to provide a comprehensive analysis of the interrelations between the two personality factors, several critical psychosocial variables, and the infractions composite. The SEM expanded on the correlates approach by providing a more robust model of the risk factors.

The SEM results for the overall sample indicated the model was able to account for 17% of the variance in the infractions composite, which was predicted by hostility, age of onset, intelligence, and home disapproval rating. These results matched those provided by regression analyses; combined with length of stay, these variables

explained 20% of the variance in infractions. These results support the hypothesis, in that the model had excellent fit with the data, and the moderate R^2 indicated that a meaningful portion of the variance in infractions was explained by the predictors.

Predicting Recidivism

According to a recent report by the Texas Youth Commission (TYC; 2004), both rearrests and re-incarcerations were reduced between 2000 and 2004. Despite these promising results, the TYC anticipates nearly half of all youth (47.6%) will be reincarcerated within three years of release. The rate of re-incarceration for youth in the present study was lower, with only 39.1% of the sample reincarcerated at one- to three-year follow-up. Thus, it is critical to identify both the factors contributing to the downward trend, and those that remain important targets for intervention.

The target outcomes for this study were limited to dichotomous variables indicating broad measures of the construct of recidivism. Analyses were somewhat limited, in that the dependent variables likely contained a large amount of measurement error (i.e., recidivism does not account for those youth who reoffended but were not caught) and little variability in their presence/absence form. To address these issues, the SEM utilized an aggregate of two recidivism variables: (a) violence and arrest at one year and (b) re-incarceration at either or both one- and three-year follow-ups. The data available were longitudinal, given that the TYC tracked youth for three year after release; however, the types and frequencies of offenses were unknown.

Notwithstanding these limitations, the SEM was able to account for 33% of the variance in the recidivism factor for the overall sample and 62% of the variance in recidivism for youth in the chemically dependent treatment program.

While the SEM predicted a global recidivism latent variable, the hierarchical regression analyses predicted the separate variables that went into the global latent variable. Results of the hierarchical regression analyses revealed stronger results for rearrest at one-year follow-up (R^2 s ranging from 0.13 to 0.49), compared with variance explained for re-incarceration within three years (R^2 s ranging from 0.09 to 0.15). Many factors likely intervened between arrest and incarceration and should be considered when interpreting these results. For example, as mentioned, although the sample largely consists of chronic, serious offenders, it is possible they were placed in more versus less restrictive settings after arrest, not convicted, or information was simply lost, due to the length of time that passed. Furthermore, the regression model does not account for measurement error, as does the latent variable approach. Finally, the SEM incorporates the two outcome measures to represent a latent construct of recidivism, maximizing the power of the prediction model. Overall, the hypothesis was supported, as it was possible to identify variables accounting for a meaningful portion of the variance in recidivism.

Does Length of Stay Reduce Recidivism?

The TYC attributes a reduction in recidivism, in part, to the average length of stay in these secure intensive programs (TYC, 2004). Specifically, on average, sex offenders stay approximately 30.3 months; those in secure mental health facilities stay 19.7 months; chemically dependent youth stay 9.6 months in secure placement; and even capital offenders' average length of stay is only 10.4 months. As such, the current study addressed each recidivism outcome separately by program group and found notably different results. While youth in the chemical dependency treatment program did have

the shortest length of stay overall, this variable had an expected inverse relationship with their violence and/or arrest within one year of release. Thus, the longer their stay, the less likely they were to be rearrested. However, length of stay seemed to have no effect at all on their re-incarceration status within three years. In addition, while length of stay did not enter into the prediction for arrest at one-year follow-up for any of the other treatment groups, it was significantly (and positively) related to the re-incarceration of capital offenders and those in mental health treatment within three years. However, because these latter two groups were small, these results could be spurious.

The hierarchical regression results seem to provide some clarification on these issues, particularly for the sex offending and chemical dependency groups. Their behavior while institutionalized in TYC facilities (i.e., infractions) was a more reliable predictor of their recidivism than the actual length of stay. These variables were correlated, although only moderately, indicating they should be considered as separate correlates of recidivism. Past criminal behavior also played an important role for the outcomes of these youth.

Role of Past Behavior

Klassen and O'Connor (1994) asserted the importance of using past criminal behavior in risk assessments for violence by stating that "virtually any measure of past offending can be expected to predict future violence" (p. 233). Consistent with their claim, many actual risk instruments administered to recently-adjudicated youth are heavily weighted with items related to past violent or criminal behavior. In fact, past criminal behavior is one risk factor that is likely considered in all clinical judgments and invariably appears on most actuarial measures (Moffitt, Caspi, Dickson, Silva, &

Stanton, 1996). This study sought to test the hypothesis that past behavior predicts future behavior. Specifically, the current study assessed whether past offending was related to violence, poor institutional behavior, and reoffending among youthful offenders. Arrest and court records included information about past criminal activity for each offender, including the age at which each offender was first arrested.

Past Behavior Predicting Institutional Behavior

The relationship between past criminal behavior and institutional behavior was tested directly in the hierarchical regression analyses. The frequency of past crimes, including both violent crimes and felonies, was unrelated to institutional maladjustment for the overall sample and all program groups, except for youth in chemical dependency treatment. With respect to the SEM results, age at first arrest (age of onset) was an important background variable, and results indicated its significant contribution to poor institutional behavior. Furthermore, age of onset was significantly predictive of infractions in the regression analyses, but only for the sex offending group. Age of onset is an important contributor to the outcome variables, so its role will be discussed at length in later sections.

Past Behavior Predicting Recidivism

As expected, some criminal history variables were related to recidivism. For the overall sample, past crimes and past violence were major players in future offending. The effect of past behavior had differential effects for certain types of offenders. The number of past crimes was most predictive of one-year recidivism for sex offenders, and past felonies contributed significantly to the recidivism of youth with substance dependence. However, the additional contributions of the personality measures and

family functioning underscore the importance of more dynamic processes affecting youths' propensity for rearrest within one year of release. Additionally, the relative influence of past delinquency on future offending was generally small, given the R^2 values (0.06-0.26).

As a measure of past behavior, youths' institutional behavior was predictive of recidivism. As the SEM demonstrated, institutional behavior was moderately to strongly associated with recidivism for both the overall sample and the chemically dependent youth. Furthermore, the regression analyses highlighted the specific influence of violent infractions on re-incarceration. Violent behavior while incarcerated seemed to contribute to long-term failure, in terms of increasing the chronicity and perhaps seriousness of young offenders' criminality.

Results indicated Infractions seemed to exhibit a strong mediating effect on the relationship between the other predictors and recidivism. The exact nature of this mediation process is unclear; however, it is possible that fewer infractions could be indicative of greater engagement in treatment for some youth in the TYC. In this way, better adjustment to the institutional environment may disrupt the effects of the other personality and psychosocial variables, including age of onset, on youths' propensity for re-offending.

Important Theoretical Considerations of Age of Onset

The "early starter" hypothesis (Patterson et al., 1992) provides a theoretical framework for conducting research with delinquent youth. Specifically, individuals who engage in early criminal activity are hypothesized to be at high risk for continuing these behaviors into adulthood (Kazdin, 1990; Wiebush et al., 1998). Although "early starters"

comprise only 4-11% of all delinquents (Moffitt, 1993b), empirical support exists for the early starter hypothesis within the current sample, given the results that age of onset predicted infractions.

To further examine these results, a median split was conducted at age 14.67, and then the groups were compared on the infraction composite. This supplementary analysis provided additional support for the “early starter” hypothesis, in that youth who were first arrested at a younger age produced more management problems ($M = 245.70$) for the duration of their incarceration than their older counterparts ($M = 99.87$), $t = 6.33$, $p < .001$. An alternative explanation, also offering support for the “early starter” hypothesis, is that the majority (if not all) of participants in the current study qualify for this distinction. According to Smith et al. (1997), base rate information indicates that age 15 should be used to distinguish “early starters” from those who begin engaging in antisocial behavior after age 15. Accordingly, because the majority (nearly 60%) of participants in this sample tended to be younger than 15 years when they were first arrested, most could be considered early starters. Theoretically, this distinction would elevate them to a higher risk status for poor institutional adjustment than other young offenders. But of course, age of onset by itself may be a proxy variable for other critical dispositions that cause early antisocial behavior.

Role of Personality Variables

Psychopathic personality is comprised of affective, interpersonal, behavioral impulsivity, and antisocial tendencies components (Vitacco et al., 2005). Lack of empathy is considered a core element of psychopathic individuals and critical for understanding the way in which they interact with others. Considered to have both

emotional and cognitive components, a deficiency in empathic responding has been shown to play a fundamental role in the commission of violence and other aggressive acts (Vitacco et al., 2005).

Empathy

According to Hilton (1993), a paucity of empirical evidence exists on the relationship between empathy and criminal behavior. Several researchers have attempted to define empathy among offenders, with particular emphasis on the differences in the expression of empathy between different types of offenders. For example, several studies utilizing the IRI focus on the differences in subscales scores between sex offenders, non-offender controls, and non-sex-offending delinquents; however, these studies have not addressed the predictive utility of the IRI for negative outcomes such as recidivism for these offenders.

The present study addressed the direct role of empathy on institutional adjustment and recidivism and tested (indirectly) the differences between offender types on the IRI. Specifically, the relative influence of empathy on infractions and recidivism was examined for each offender group separately. Importantly, lower empathy was predictive of recidivism within one year of release for the overall sample. Group analyses revealed the same effect of empathy for the sex offending and chemically dependent group.

Results indicated that empathy did not play a role in the institutional behavior of the young offenders. However, it is important to consider the possibility that empathy might not have emerged as a significant predictor of infractions simply because all youth in the TYC undergo empathy skills training through an intensive resocialization program.

Each offender spends a considerable amount of time processing his offense and completing exercises specifically designed to improve victim empathy. Given this focus on the enhancement of empathy in the TYC, higher empathy ratings might be expected for the current sample of offenders. A brief comparison of IRI scores with those from several other studies (with sex offenders and non-sex-offending delinquents) indicated the IRI total scores were relatively average, even across offender type.

Another surprising finding was that empathy did not appear to be related to hostility, despite previous research indicating a strong relationship between the two personality characteristics among adolescent sex offenders (Curwen, 2003). Furthermore, Dodge's theory of a hostile attribution bias (Dodge, 1991) would seem to support an association between empathy and hostility. Specifically, because empathy involves inhibiting negative behaviors that are harmful to others, and individuals with a hostile attribution bias act aggressively because of misinterpretations of what might be harmful to others, an inverse relationship between the two personality constructs might be expected. On the other hand, the current results suggest that these two psychological processes (hostility and empathy) operate independently.

Several studies have expounded on the complexity of empathy among offenders. For example, Book and Quinsey (2004) found that adult psychopaths and controls did not differ in their level of self-reported empathy. In contrast, two studies with young offenders noted the elevated Personal Distress component of empathy, emphasizing the personal experience of distress felt by the perpetrator of the offense, as compared to the vicarious feelings of concern for the victim (Cohen & Strayer, 1996; Lindsey et al.,

2001). These results indicate the effects of empathy may be mediated or moderated by other factors, including personality and/or treatment program components.

As noted by Curwen (2003), empathy may not always serve as a positive personality attribute but be utilized for non-altruistic purposes. In other words, offenders who intend to cause harm to their victims require some level of empathy to assess whether they were successful in doing so. Support for this hypothesis was provided by the current study. Empathy scores were highest among sex offenders and capital offenders, who by nature of their index offenses, could perhaps be considered the most sadistic groups of offenders. These two offender groups also had the most number of past violent offenses. Another possible explanation for the high self-reported empathy among the capital offender group is the nature of their treatment program. Capital offending youth in the TYC undergo intensive empathy-based therapeutic intervention, which extends beyond the TYC's resocialization program by incorporating family therapy and role-playing of offense patterns and victim impact. The effects of such treatment were not tested in this study, but it is possible these youths' self-descriptions were impacted by their treatment experiences in which the development of empathy skills is a core component. Nonetheless, the inverse relationship between empathy and recidivism was supported for the capital offending and mental health groups. Lower empathy was an important predictor for recidivism in the short-term (i.e., one year). Results supported the conceptualization of empathy as a complex construct that may be experienced and expressed differently across offender types and affected by personality and treatment variables.

Hostility

This study also investigated the relationship between BDHI hostility and the behavior of incarcerated adolescents. Several previous studies have assessed the effects of hostility on institutional behavior, with mixed results. For example, Swett and Hartz (1984) found the BDHI to be predictive of violent acts by adult forensic patients. However, Gunn and Gristwood (1975) found no relationship between the BDHI and staff-rated violence among adult British prisoners. These studies, in addition to the current results, highlight the differential effect of hostility among various offender types. Among the current sample, hostility was most predictive of institutional maladjustment for sex offenders and chemically dependent youth. The BDHI added incremental validity to length of stay and age of onset in the prediction of institutional misconduct for both of these offender groups.

Finally, as indicated by previous research, BDHI hostility appears to be indicative of an underlying behavioral disinhibition that likely accounts for the relationships between hostility and antisocial behavior and violence. Several of the variables included in this study may actually be manifestations of a general inhibitory deficiency among some adolescent offenders. As a result, this issue will be discussed in greater detail in a later section.

Role of Psychosocial Variables

Cognitive Functioning

It was expected that low cognitive functioning would emerge as a correlate and/or predictor of the negative outcomes for this sample of delinquent youth. Some evidence for the effects of low IQ was provided by the SEM, in that IQ was positively

related with recidivism for the chemically dependent program group. For the overall sample, intelligence was related to the frequency of past criminal behavior but was not associated with any of the other predictors (all $r_s \leq -.08$). This was somewhat surprising, given that low IQ was expected to emerge as a correlate or risk factor for negative outcomes. Importantly, empirical evidence exists for the specific risk effects of low verbal intelligence as compared to overall intelligence (Loeber et al., 2001; Vitacco et al., 2005). In fact, low verbal intelligence is linked with indicators of behavioral disinhibition, suggesting it is a manifestation of an underlying liability for some offenders. Notably, in the current study, the intelligence variable was an estimate of overall cognitive functioning; information about verbal intellect was not provided.

Although a measure of psychopathic traits was not included, the current sample was comprised of rather chronic, high-risk offenders, for whom an increased prevalence of psychopathic features would be expected. Intelligence was expected to relate to the characteristics associated with a psychopathic personality that were assessed in the current study (e.g., empathy). Previous research has provided evidence to support impaired intellectual ability as a correlate of deficits in affective functioning and, particularly in the verbal domain (Loney et al., 1998; Salekin, Neumann, Leistico, & Zalot, 2004b). One plausible explanation for the present results is that the IRI measure assesses empathic responding that is distinct from other affective traits associated with the construct of psychopathy (i.e., deceitfulness, superficiality). The latent variable approach provided by Salekin et al. (2004b) provided some clarification on the complexity of the relationship between intelligence and pathological personality functioning among youthful offenders. Their results demonstrated a differential

connection between various domains of psychopathy and verbal intelligence. Specifically, a strong positive relationship emerged between verbal intellectual ability and the arrogant, deceitful interpersonal style that characterizes psychopaths, while intelligence was inversely related to the affective processing. Unfortunately, the current study could not provide additional support for this model.

Family Functioning

Parents' psychopathology and criminality clearly have strong influences on the development of similar problems within their children, these effects resulting from a genetic liability, the impact of the environment they create, or both. Parental criminality, substance abuse, and psychopathology are among the most significant contributors to a biopsychosocial predisposition to negative outcomes among youth. The current study was not able to directly address these issues as risk factors and instead utilized a summative index of overall family functioning at the time of the offenders' release from the TYC. Although this variable is a rather unsophisticated measure of family functioning, the home disapproval rating does reflect the level of pathology in the family, and incorporates information about parental psychopathology, substance use, and criminal activity.

The youth in sex offender treatment group had the highest disapproval rating, followed by those in mental health treatment. This is not surprising, given the likelihood that the homes of sex offenders may be disapproved due to the presence of their victims and/or another perpetrator in the home, and the families of youth in mental health treatment are more likely to have problems such as psychopathology, criminality, and substance use.

Family functioning was associated with institutional maladjustment for the overall sample and was significantly predictive of infractions in the SEM. The home disapproval status continued to add to the regression prediction model, even after accounting for length of stay, age of onset, and hostility. This effect may be explained by the fact that the two groups with the highest disapproval ratings committed the most infractions. However, family functioning did not contribute to the infractions composite for these groups after length of stay was considered. Therefore, it is possible that length of stay serves as a mediator between family functioning and infractions for sex offenders and mentally ill youth.

Substance Use

This study was not longitudinal in the sense that it did not include repeated measures of substance use; thus, it did not offer evidence to support the “launch” or “snare” hypotheses (Hussong et al., 2004). Moreover, the current study did not differentiate between types of drugs used, as some researchers have suggested may be important for predicting criminal behavior among youth (Hammersley et al., 2003). To test whether substance use is an independent predictor of recidivism, Stoolmiller and Blechman (2005) used a Cox Hazard regression model and found substance use did robustly predict future offending above and beyond the effects of prior delinquency and age of first arrest. Others (e.g., O’Neill, Lidz, & Heilbrun, 2003) have suggested that substance use mediates the relationship between negative outcomes and maladaptive personality functioning. Some evidence exists for its moderating effects on hostility and aggression (Connor, Steingard, Cunningham, Anderson, & Melloni, 2004).

In the current study, an ordinal measure of substance use (none, abuse, and dependence) did exhibit a moderate negative relationship with empathy and a small negative correlation with hostility. Substance use was also associated with all of the psychosocial variables as well as past criminal behavior. Thus, the chemical dependency group was examined separately in order to elucidate differences between these offenders and other youth.

The relationship between substance use and offending is extremely complex and may reflect a reciprocal relation. In a controlled environment such as the TYC, substances are not entirely scarce, but the effect of substance use on institutional behavior (other than infractions directly caused by substance use, such as possession of illicit substances) is minimized. Therefore, an association between a diagnosis of a substance use disorder and institutional maladjustment is potentially indicative of a common latent factor, such as behavioral disinhibition or other temperamental characteristics.

Behavioral Disinhibition as an Underlying Latent Risk Variable

Recent developments in the literature (e.g., Lynam, 1996; Offord, Boyle, & Racine, 1991; Vitacco, Neumann, Robertson, & Durrant, 2002; Witt & Dyer, 1997) provide evidence for an underlying inhibitory deficiency among delinquents. Loss of inhibitory control can be used to explain the independent contributions and overlap of hostility, substance use, and impulsivity, to their negative outcomes. Additionally, several developmental models offer explanations for the high prevalence of impulsivity, aggression, and substance use among conduct-disordered youth. For example, Kirisci, Tarter, Vanyukov, Reynolds, and Habeych (2004) provided a latent variable model

indicating the crucial role of neurobehavior disinhibition as a mediator between several psychosocial risk factors (e.g., parental substance abuse) and negative outcomes, including substance use disorders, conduct disorder, and adult antisocial behavior.

Impulsivity is a well-supported risk factor for antisocial behavior (Loeber et al., 1998; Vitacco et al., 2002) and a major component of behavioral disinhibition and reactive aggression. Impulsivity has been considered one of the most important contributors to non-release decisions in dangerousness hearings (Rogers, Sewell, Ross, Ustad, & Williams. 1995). This study was not able to address impulsivity, which likely would have enhanced the predictive power of the model and perhaps provided more insight into a fundamental vulnerability that encompasses hostility, substance use, cognitive functioning, and even some facets of family functioning.

Clinical Implications

The role of a mental health professional within the juvenile justice system often involves the provision of information crucial to effective resource allocation and consistent treatment decisions. Responsibilities may therefore include conducting diagnostic and risk assessments for classification and prediction purposes, as well as implementing and managing correctional and specialized treatment programs within the institutional setting. Ideally, clinicians consult research findings for empirically-validated factors to include in their evaluations and treatment decisions, selecting variables most salient to the intended purpose of the assessment.

As noted previously, research by Barton and Gorsuch (1989) demonstrated a preponderance of actuarial measures in the classification of juvenile offenders. Many of these actuarial instruments rely almost entirely on static criminal history items. As such,

they provided little direction for treatment decisions due to the lack of information about changes in offenders' behavior. Despite the empirical evidence demonstrating the advantages of actuarial instruments (Grove & Meehl, 1996), these prediction tools have many shortcomings. On the whole, actuarial risk assessments exclude potentially significant case-specific, dynamic variables while relying on pre-determined cut scores to establish an individual's level of risk. As those supporting a more comprehensive approach suggest, actuarial predictions may be most useful when accompanied by an examination of the presence and relations between specific variables operating within the individual. Notably, newer empirically-tested risk assessment measures (see Bonta, 1996) include dynamic factors, which assess change in the offender.

Several factors influence the selection of variables included in the assessment process. The purpose of the evaluation is crucial to determining whether the professional can rely on static variables (e.g., legal classifications, past behavior indicators) or whether dynamic variables reflecting individual differences would provide additional information useful to treatment decisions. In general, results of this study indicate the importance of considering certain psychosocial (e.g., age of onset, home disapproval) and personality (e.g., hostility) factors associated with a youthful offenders' institutional behavior, and evaluating other personality variables (e.g., empathy), psychosocial factors (e.g., home disapproval), and indicators of past behavior (e.g., previous institutional behavior, past crimes, age of onset) when determining risk for future offending.

In sum, evaluators and treatment providers should include a combination of personality, psychosocial, and environmental factors, as past behavior does not always

serve as the most reliable indicator of future behavior. Expanding upon past criminal history to include these variables, as well as measures of previous institutional adjustment, will likely enhance predictions of future behavior. Additionally, although some individual differences exist among offender types, empathy and hostility remain fluid personality factors that can be targeted for intervention. Finally, as family functioning exerts an important influence upon youthful offenders' institutional behavior and propensity for recidivism, it should be included in evaluations and considered an essential component of treatment interventions.

Limitations and Future Directions

An enduring challenge for clinicians, juvenile justice policymakers, and correctional staff is to evaluate information crucial to the provision of effective management of youthful offenders, at every level of processing through the correctional system. The current study is valuable in examining the various factors important to predictions of institutional behavior and recidivism. Importantly, expanded prediction models were identified for different types of offenders involved in various specialized treatment programs. In addition, results provide insight into certain psychosocial and personality variables other than past behavior that can be used to predict the likelihood of young offenders' exhibiting negative outcomes, including institutional maladjustment and future reoffending.

A great deal of information about the participants in this study was obtained through self-report and record review. As with any study using self-report measures, issues related to construct validity are important to address. Despite the use of self-report measures with long-standing, well-established construct validity (e.g., BDHI and

IRI), multiple measures of information are always desired and preferred, particularly when dealing with populations who may lack the motivation to respond validly. In fact, one study (Posey & Hess, 1984) demonstrated the ability of offenders to simulate aggressive and non-aggressive responding on the BDHI. Unfortunately, no measures of social desirability or assessments of overall response style were administered to participants. Due to the archival nature of the study, it was not possible to access original data sources to obtain additional information and check accuracy. Future researchers could expand upon these data collection procedures to include a variety of methodologies for obtaining information about these constructs (e.g., collateral reports by parents or staff, interview data, or observational measures). Moreover, social desirability and response style measures could complement these procedures in order to provide validity checks on the self-reporting by youthful offenders.

Also, the original intent of the study was to include three measures of personality constructs associated with delinquency and negative outcomes for young offenders. It was discovered early in the data management process that the Nowicki-Strickland Locus of Control (LOC; Nowicki & Strickland, 1973) measure would be challenging to incorporate into analyses. The LOC was not administered to most of the youth who completed the other self-report measures. Additionally, the factor structure of the LOC could not be ascertained as part of Research Question #1, given the inadequate sample size. Future studies could attempt to clarify the factor structure of the LOC, particularly among youthful offenders. Evaluating locus of control as a latent variable with variability beyond the internal/external dichotomy would provide an important contribution to the

literature and to understanding its potential role as a correlate and/or predictor among this population.

Data were entered by TYC staff members at various locations throughout the state. Although attempts were made to code and enter data uniformly, initial attempts to manage the data revealed this was not always the case. The original datasets were large and contained incomplete or inconsistent information that had to be clarified by researchers in the TYC's central office. The result was missing data for some variables; some additional steps were taken to enhance the completeness of information for analyses. For example, to maximize the sample size for inclusion in the analyses, IRI and BDHI total scores were created from aggregating subscales containing scores for at least 70% of the items. Another limitation stemmed from the ordinal data coding for some of the predictors (e.g., home disapproval status, substance use), which limited their validity as indicators of the constructs of interest. Ideally, future investigators could incorporate multiple measures of these constructs and perhaps validate their efficacy with this population through comparisons with other more established measures (e.g., the Psychopathy Checklist: Youth Version).

It was decided early in the data analytic process to distinguish between different types of offenders, based on the specialized treatment programs in which they were enrolled. Separate SEM for the chemically dependent youth provided information unique to this group of offenders with substance dependence diagnoses. In light of these group differences, some important caveats must be addressed. Many offenders are assigned to treatment programs, not necessarily as a result of diagnostic classification, but based on their legal categorizations. For example, youth in the capital

offending and sex offender programs are designated for treatment based on their index offenses; these youth may also qualify for placement in chemical dependency or mental health treatment based on Axis I diagnoses. These placement decisions result in considerable overlap between the treatment groups, in that offenders in each group could potentially qualify for placement in other groups. For example, a majority of the sample of offenders (61.4%) was positive for substance abuse and/or dependence diagnoses. Thus, several youth in other treatment groups likely had serious substance abuse problems that became secondary to other treatment priorities. For example, 62.0% of the capital offenders and 36.6% of the sex offenders had an identified need for substance use treatment. At the time of the study, the nature of their offenses outweighed the need for chemical dependency treatment. Youth in mental health treatment showed significant comorbidity between substance use disorders and other psychiatric illnesses, as 70.2% of these offenders were also designated as in need of treatment for substance use. Therefore, the results specific to offenders in any of the specialized program groups should be interpreted with caution, as they reflect group membership based only the primary diagnosis or principal treatment issue identified at the time of initial processing in the TYC. In this context, the SEM and regression results for the entire sample may be the most informative.

Additional research with more comprehensive information about offenders' substance use could employ latent trajectory models similar to those used by Hussong et al. (2004) in order to assess change over time in the relationship between offending and substance use, particularly as delinquent youth are processed through the correctional system and tracked after their release.

These data issues and other qualities of the sample itself contribute to the limited generalizability of the results. The current sample was extreme, given the baseline for risk among the participants. Due to their overall young age of onset, breadth of criminal behavior, history of delinquency, length of incarceration, and the current level of security, the sample was primarily composed of chronic, serious young offenders. The variables identified as significant contributors to institutional infractions and recidivism may be limited to the highest risk offenders; the same effects may not occur among young offenders at other levels of risk. However, results highlight the fact that negative outcomes are not presumed for everyone, even among high-risk offenders. As aforementioned, the majority of participants (for whom information was available at follow-up) did not recidivate, even within three years after release. As such, measures of potential compensatory or protective effects could be incorporated into future research, both to maximize the predictive power of the models and to identify variables that minimize risk.

Another notable limitation to the current study involves the quality of the outcome measures. First, the measures of recidivism were based solely on offenses for which the offender was arrested and/or adjudicated, which obviously fails to capture the psychosocial and personality dynamics of those individuals who do reoffend but are not caught. Second, summative indices were necessary, given the amount of information to compile for the institutional behavior of each youth (i.e., infraction composite), and in order to provide a latent variable for causal modeling (i.e., the recidivism factor in the SEM). The infractions composite provided an overall representation of the offenders' behavior while in the TYC, while the recidivism variables are limited to

presence/absence measures. However, the predictive power of the predictor variables is lost by reducing the variability that likely exists in these outcomes, even among the same type of infraction or crime (e.g., violent). For example, one youth may receive an incident report for “assault of a student,” while defending himself against an attack, whereas another youth could receive the same infraction for intentionally stabbing another student.

The overall power of the prediction models may be tempered by the fact that the current study was unable to include 195 participants in the assessment of factors predicting recidivism. These youth were either released before the recidivism data were collected, or they were transferred to the adult correctional system. Both of these groups could have possibly contributed unique information to the prediction of outcomes for incarcerated youth. Although extremely challenging under these conditions, it was still possible to account for a significant amount of variance in a restricted outcome such as reoffending within one to three years. More research is needed to provide clarification on the method for identifying and group outcomes, such as recidivism. Numerous and diverse measures of reoffending are available, but it is unclear what target is most robust and indicative of a latent variable of reoffending.

The current study was unable to evaluate gender differences in the underlying structure of empathy and hostility and in predicting offenders’ institutional infractions and rates of reoffending. The original sample contained too few females for analysis ($n = 18$). Whenever possible, research should target individual, family, and community factors within males and females, in an effort to determine whether risk factors among girls are the same or distinct from those of boys.

Results indicate it is important to broaden the scope of risk variables to incorporate other family and environmental factors that may contribute to negative outcomes, including recidivism. It was not feasible to collect information about community and broader societal factors that may contribute to negative outcomes for youthful offenders. Even factors within the TYC community environment affect each adolescent and his institutional behavior and propensity for recidivism. For example, exposure to delinquent peers and gang involvement are considered risk factors for one's own delinquent behavior and violence (Bjerregaard & Smith, 1993; Esbensen & Huizinga, 1993; Keenan et al., 1995; Stouthamer-Loeber et al., 1993; Thornberry et al., 1993), potentially placing youthful offenders who are in correctional settings at an even higher risk. Future research should investigate which environmental influences exert risk effects for adolescents and young adults at risk, and target interventions and prevention programs accordingly.

Summary

This study provided a comprehensive investigation of the interrelations between a subset of psychosocial, personality, and offense variables in a large sample of youthful male offenders incarcerated in the Texas Youth Commission. It was possible to incorporate important variables into prediction models to assess their individual and collective influence on young offenders' institutional behavior and likelihood of rearrest and/or re-incarceration. The results of this study indicate a combination of these variables predicts institutional maladjustment to a moderate degree. Furthermore, this study provided information about the variables most prognostic of recidivism within one year, and to a lesser degree, within three years. The inability to produce robust

prediction models for reoffending underscores the need for expanding and clarifying a latent recidivism factor.

Adolescent offenders vary considerably in their backgrounds, offense characteristics, response to treatment, and rates of future criminal behavior. In the current study, distinct prediction models were tested, based on the specialized treatment programs to which youth were assigned. For the most part, offenders did not differ extensively in the types of risk variables. However, the differences that emerged have important implications for the management and intervention of various types of offenders. For example, longer sentences may not produce their desired effect (i.e., reduced recidivism) among all offenders; in fact, longer incarceration periods may decrease the rate of recidivism in the short-term among chemically dependent youth but actually *increase* the chances of recidivism in the long-term for capital and mentally ill offenders.

Although past behavior continued to be an important predictor of future behavior, this was not true for all youth across all outcome measures. It is important to consider other, sometimes more significant, key characteristics of the individual and his family, in addition to gathering information about past delinquency. Age of onset emerged as a static indicator of past behavior important for future behavior, underscoring the need to target interventions to the youngest age groups in an attempt to prevent adolescent delinquency and adult criminal involvement. Additionally, predictions of recidivism for youth in the TYC could be enhanced by incorporating indicators of their past behavior while incarcerated.

Hostility and empathy appear to be major personality components operating on young offenders to either increase or decrease their risk for negative outcomes. This study demonstrated the efficacy of two self-report measures of these constructs as important uni-dimensional contributors to the behavior of youthful offenders. The exact nature of their relation to each other is unclear and should be addressed in future studies. Furthermore, until an understanding of the mechanism by which increased self-reported empathy might increase antisocial behavior and intensify violence is attained, clinicians should proceed with caution in empathy skills training, particularly for youth who have committed sexual or capital offenses.

Additional evidence for a behavioral disinhibition latent trait might serve to encapsulate the various risk variables identified for this population. The individual effects of poor family functioning, low verbal intelligence, substance use, hostility, impulsivity, behavioral disorders such as ADHD, ODD, and CD, and young age of onset might exist as manifestations of this underlying vulnerability. Genetic studies and multivariate approaches (e.g., latent trajectory models) will help researchers and clinicians discover the internal and external influences operating on an individual in order to target their intervention efforts. The findings of this study provide the early steps toward a more comprehensive understanding of the correlates and potential etiologic factors associated with the onset and maintenance of offending among today's youth.

Table 1

Description of Independent Variables

	Measure	Scale of Measurement
Race	Self-reported/observed ethnicity	Four classifications
Intelligence	Standardized intelligence tests	Continuous IQ score
Substance abuse	Chemical dependency treatment need	Ordinal variable
Age of onset	Age at first arrest	Continuous variable
Empathy	Interpersonal Reactivity Index (IRI)	Four continuous subscales ¹
Hostility	Buss-Durkee Hostility Inventory (BDHI)	Eight continuous subscales ¹
Home approval status	TYC home disapproval rating	Average continuous rating
Length of stay	Average stay (in months)per incarceration	Continuous variable
Nonviolent crimes	Total number of past adjudications for nonviolent crimes	Continuous variable
Violent crimes	Total number of past adjudications for violent crimes (e.g., murder, assault, aggravated assault, etc.)	Continuous variable
Felonies	Total number of past adjudications for felonies	Continuous variable

Note: ¹A total score was calculated for each of these measures with $\geq 70\%$ subscale data.

Table 2

Description of Dependent Variables

Predicted Outcome	Variable Description
Infraction Composite	Summative index including nonviolent infractions, violent infractions, referrals to security, and admissions to security
Arrest	Presence/Absence of arrest (for violent or any offense) within one year after release
Re-incarceration	Presence/Absence of re-incarceration within one to three years after release

Table 3

Descriptive Information of Independent and Dependent Variables (Overall Sample)

	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>	<i>Kurtosis</i>	<i>Cronbach's α</i>
IQ	880	92.78	12.38	54.00	133	0.30	0.21	
Age of onset	900	14.39	1.70	10.00	17.83	-0.48	-0.51	
Home approval	607	2.37	0.77	1.00	3.00	-0.79	-0.93	
Length of stay	760	41.43	15.77	12.00	93.00	0.41	-0.33	
IRI Empathy	773	55.03	18.17	2.00	99.00	-0.61	0.11	0.77
BDHI Hostility	672	41.40	11.24	8.00	68.00	-0.11	-0.42	0.87
No Substance Abuse <i>n</i> (%)			301 (33.40)					
Substance Abuse <i>n</i> (%)			252 (28.00)					
<u>Infractions</u>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>	<i>Kurtosis</i>	
Nonviolent Infractions	900	98.20	203.64	0	2344	5.18	38.40	
Violent Infractions	900	4.61	12.70	0	183	7.27	72.13	
Referrals to Security	900	48.85	94.72	0	967	4.29	24.79	
Admissions to Security	900	19.11	39.31	0	368	4.15	21.79	
Infraction Composite	900	175.38	352.61	0	3514	4.81	31.59	
<u>Recidivism</u>								
Arrest within 1 year <i>n</i> (%)			255(28.30)					
Re-incarcerated within 1-3 years <i>n</i> (%)			276 (30.70)					

Table 4

Confirmatory Factor Analysis Model Fit Results

Model	S-B χ^2	df	CFI	SRMR	RMSEA
1 BDHI hostility factor	144.02	41	0.940	0.066	0.079
1 IRI empathy factor					

Note: S-B χ^2 = Satorra-Bentler Chi Square. CFI = Comparative fit index. SRMR = Standardized root mean square residual. RMSEA = Root mean square error of approximation.

Table 5

Descriptive Information of Independent and Dependent Variables (by Specialized Treatment Group)

	Total Sample ^a		Sex Offender ^b		Chemical Dependency ^c		Mental Health ^d		Capital Offender ^e		<i>F</i> / <i>X</i> ²	η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Age	15.78	1.17	15.46	1.26	16.15	0.93	15.67	1.28	15.92	1.00	23.54**	0.07
IQ	92.93	12.42	93.61	12.86	91.95	10.91	88.75	14.16	95.01	14.21	3.91*	0.01
Age at first arrest	14.39	1.70	14.17	1.68	14.70	1.67	14.10	1.79	14.41	1.76	6.49**	0.02
Home disapproval rating [†]	1.50	0.87	2.00	1.00	1.05	0.33	1.59	0.92	1.23	0.65	70.75**	0.26
IRI empathy	53.93	18.95	62.18	12.95	43.31	19.57	57.26	16.57	65.84	11.84	67.70**	0.23
BDHI hostility	41.52	11.16	43.23	11.25	39.17	10.47	47.64	11.15	41.05	11.16	10.72**	0.05
Past drug offenses	0.50	0.90	0.19	0.50	0.99	1.16	0.34	0.82	0.28	0.51	58.28**	0.17
Past crimes against persons	1.19	1.39	1.78	1.48	0.68	1.03	1.25	1.69	0.89	0.85	46.18**	0.14
Past public order crimes	2.69	3.52	1.89	2.97	3.90	3.90	4.18	4.67	1.80	2.24	25.72**	0.08
Past property crimes	2.01	2.30	1.38	1.89	2.77	2.37	2.57	2.38	1.80	2.09	27.17**	0.09
Past felonies	2.15	1.69	2.20	1.61	2.12	1.66	2.11	1.57	2.57	1.66	1.62	0.01
Past violent crimes	0.73	0.93	1.08	0.98	0.26	0.65	0.52	0.71	1.25	0.76	70.63**	0.20
Past nonviolent crimes	5.81	5.26	4.27	4.47	8.17	5.25	8.16	6.41	3.88	3.75	47.23**	0.14
Total past crimes	6.54	5.09	5.35	4.36	8.43	5.20	8.68	6.32	5.13	3.63	30.90**	0.10
Avg length of stay (months)	41.43	15.77	48.04	15.05	33.69	13.39	43.31	15.39	51.88	12.17	69.07**	0.22
Infraction Composite	174.60	354.88	281.55	456.64	44.39	131.70	367.75	379.20	66.96	73.49	40.51**	0.12
Arrest 1-yr n (%)	251 (36.32)		77 (34.07)		131 (37.97)		28 (50.90)		15 (23.08)		10.89*	
Re-incarceration 1-3yrs (%)	274 (39.65)		78 (34.51)		152 (44.06)		34 (61.82)		10 (15.39)		32.58**	

Note: ^a*n* range 469-900. ^b*n* range 226-399. ^c*n* range 267-347. ^d*n* range 34-57. ^e*n* range 52-79. [†]higher scores mean less approval. **p* < .05. ***p* < .01.

Table 6

Independent Variable Correlations (Overall Sample)

	1	2	3	4	5	6	7	8	9	10
1	-	-	-	-	-	-	-	-	-	-
2	-0.16** (880)	-	-	-	-	-	-	-	-	-
3	0.18** (900)	-0.07* (880)	-	-	-	-	-	-	-	-
4	-0.00 (900)	-0.02 (880)	0.13* (900)	-	-	-	-	-	-	-
5	-0.04 (773)	0.05 (759)	-0.43** (773)	-0.05 (773)	-	-	-	-	-	-
6	-0.12** (672)	0.02 (659)	-0.12** (672)	-0.00 (672)	-0.04 (610)	-	-	-	-	-
7	-0.08 (607)	0.08* (596)	-0.45** (607)	-0.04 (607)	0.20* (519)	0.05 (469)	-	-	-	-
8	-0.00 (760)	-0.03 (741)	-0.43** (760)	-0.20** (760)	0.24** (635)	0.07 (558)	0.26** (527)	-	-	-
9	0.04 (900)	-0.13** (880)	0.33** (900)	-0.11** (900)	-0.20** (773)	-0.09* (672)	-0.21** (607)	-0.13** (760)	-	-
10	-0.05 (900)	-0.01 (880)	-0.43** (900)	-0.06 (900)	0.24** (773)	0.04 (672)	0.29** (607)	0.32** (760)	-0.14** (900)	-
11	-0.04 (900)	-0.06 (880)	-0.03 (900)	-0.10** (900)	0.00 (773)	0.00 (672)	0.03 (607)	0.06 (760)	0.31** (900)	0.38** (900)

Note: 1 = race, 2 = IQ score, 3 = substance use, 4 = age of onset, 5 = IRI empathy, 6 = BDHI hostility, 7 = home disapproval, 8 = length of stay, 9 = total past crimes, 10 = past violent crimes, 11 = past felonies. *n* values presented in parentheses. * $p < .05$. $p < .01$.

Table 7

Independent Variable Correlations (Chemical Dependency Treatment Group)

	1	2	3	4	5	6	7	8	9	10
1	-	-	-	-	-	-	-	-	-	-
2	-0.18** (341)	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-
4	-0.14* (347)	-0.06 (341)	-	-	-	-	-	-	-	-
5	0.09 (267)	0.02 (266)	-	-0.03 (267)	-	-	-	-	-	-
6	-0.13* (327)	-0.04 (323)	-	0.07 (327)	-0.15* (266)	-	-	-	-	-
7	0.09 (257)	0.02 (253)	-	-0.03 (257)	0.13 (197)	-0.05 (239)	-	-	-	-
8	0.09 (346)	-0.11* (340)	-	-0.15** (346)	0.08 (266)	0.02 (326)	0.06 (256)	-	-	-
9	0.02 (347)	-0.08 (341)	-	-0.16** (347)	-0.06 (267)	-0.07 (327)	-0.03 (257)	-0.04 (346)	-	-
10	-0.03 (347)	-0.04 (341)	-	-0.03 (347)	-0.04 (267)	-0.01 (327)	0.01 (257)	0.17** (346)	-0.02 (347)	-
11	-0.05 (347)	0.01 (341)	-	-0.08 (347)	-0.08 (267)	0.09 (327)	0.02 (257)	-0.04 (347)	0.25** (347)	0.24** (347)

Note: 1 = race, 2 = IQ score, 3 = substance use, 4 = age of onset, 5 = IRI empathy, 6 = BDHI hostility, 7 = home disapproval, 8 = length of stay, 9 = total past crimes, 10 = past violent crimes, 11 = past felonies. *n* values presented in parentheses. **p* < .05. *p* < .01.

Table 8

Correlations Between Predictors and Infractions Composite (Overall Sample)

	1	2	3	4	5	6	7	8	9	10	11
1 Ethnicity	-	-0.12**	-0.04	-0.16**	-0.08*	-0.00	-0.00	0.04	-0.05	-0.04	-0.13** (900)
2 BDHI		-	-0.04	0.02	0.05	-0.00	0.07	-0.09*	0.04	0.00	0.26** (672)
3 IRI			-	0.05	0.20*	-0.05	0.24**	-0.20**	0.24**	0.00	0.09* (773)
4 IQ				-	0.08	-0.02	-0.03	-0.13**	-0.01	-0.06	-0.09* (880)
5 Home disapproval					-	-0.04	0.26**	-0.21**	0.29**	0.03	0.14** (607)
6 Age onset						-	-0.20**	-0.11**	-0.06	-0.10**	-0.23** (900)
7 Length of TYC stay							-	-0.13	0.32**	0.06	0.30** (760)
8 Total past crimes								-	-0.14**	0.31**	-0.01 (900)
9 Past violent crimes									-	0.38**	0.03 (900)
10 Past felonies										-	-0.02 (900)
11 Infraction Composite											-

Note: *n* values not included in previous tables are presented in parentheses. * $p < .05$. ** $p < .01$.

Table 9

Correlations Between Predictor Variables and Infraction Composite (by Specialized Treatment Group)

	Sex Offender	Chemical Dependency	Mental Health	Capital Offender
BDHI	0.29** (399)	0.16** (347)	0.08 (48)	0.16 (79)
IRI	-0.06 (217)	-0.06 (327)	0.15 (48)	0.08 (79)
IQ	-0.13* (378)	-0.07 (267)	0.00 (56)	-0.14 (75)
Home disapproval	-0.09 (391)	-0.06 (341)	0.21 (34)	0.09 (52)
Age onset	-0.25** (252)	-0.07 (257)	-0.29* (57)	-0.04 (79)
Length of TYC stay	0.21** (399)	0.25** (347)	0.47** (56)	0.50** (77)
Total past crimes	0.11* (264)	-0.00 (347)	-0.11 (57)	0.18 (79)
Past violent crimes	-0.15** (399)	0.15** (346)	0.04 (57)	-0.12 (79)
Past felonies	-0.06 (399)	0.05 (347)	0.01 (57)	-0.09 (79)

Note: *n* values presented in parentheses. * $p < .05$. ** $p < .01$.

Table 10

Correlations Between Predictors and Arrest at One-year Follow-up (Overall Sample)

	<i>n</i>	Arrest at 1-yr Follow-up
1 Ethnicity	516	-0.09*
2 BDHI	589	0.06
3 IRI	688	-0.21**
4 IQ	480	-0.05
5 Home disapproval	705	-0.18**
6 Age onset	678	-0.10**
7 Length of TYC stay	705	-0.06
8 Total past crimes	705	0.20**
9 Past violent crimes	705	-0.08*
10 Past felonies	705	0.11**
11 Infraction composite	705	0.19**

Note: * $p < .05$. ** $p < .01$.

Table 11

Correlations Between Predictors and Arrest at One-year Follow-Up (by Specialized Treatment Group)

	Sex Offender	Chemical Dependency	Mental Health	Capital Offender
BDHI	0.01 (79)	0.08 (325)	0.28 (46)	-0.25* (65)
IRI	-0.16* (212)	-0.44** (265)	0.14 (46)	0.04 (65)
IQ	-0.10 (221)	-0.02 (339)	0.18 (54)	-0.09 (61)
Home disapproval	-0.32** (142)	0.02 (255)	-0.56** (33)	0.05 (41)
Age onset	-0.23** (226)	-0.04 (345)	-0.08 (55)	-0.09 (65)
Length of TYC stay	-0.00 (203)	-0.11* (344)	0.10 (55)	0.18 (63)
Total past crimes	0.38** (226)	0.07 (345)	0.15 (55)	0.17 (65)
Past violent crimes	-0.12 (226)	0.04 (345)	-0.12 (55)	-0.13 (65)
Past felonies	0.07 (226)	0.15** (347)	0.13 (55)	0.19 (65)
Infraction Composite	0.22** (226)	0.23** (345)	0.12 (55)	0.10 (65)

Note: *n* values presented in parentheses. **p* < .05. ***p* < .01.

Table 12

Correlations Between Predictors and Re-incarceration at One-to Three-year Follow-up (Overall Sample)

	<i>n</i>	Re-incarceration at 1- to 3-yr Follow-up
1 Ethnicity	705	-0.07
2 BDHI	516	-0.00
3 IRI	688	-0.11*
4 IQ	480	-0.09*
5 Home disapproval	705	-0.07
6 Age onset	678	-0.08*
7 Length of TYC stay	705	0.04
8 Total past crimes	705	0.11**
9 Past violent crimes	705	-0.19*
10 Past felonies	705	-0.07
11 Infraction composite	705	0.14**

*Note: *p < .05. **p < .01.*

Table 13

Correlations Between Predictors and Re-incarceration at One- to Three-year Follow-Up (by Specialized Treatment Group)

	Sex Offender	Chemical Dependency	Mental Health	Capital Offender
BDHI	-0.02 (79)	0.08 (325)	0.28 (46)	-0.25* (65)
IRI	-0.13 (212)	-0.44** (265)	0.14 (46)	0.04 (65)
IQ	-0.06 (221)	-0.02 (339)	0.18 (54)	-0.09 (61)
Home disapproval	-0.21* (142)	0.02 (255)	-0.56** (33)	0.05 (41)
Age onset	-0.21 (226)	-0.04 (345)	-0.08 (55)	-0.09 (65)
Length of TYC stay	0.03 (203)	-0.11* (344)	0.10 (55)	0.18 (63)
Total past crimes	0.22** (226)	0.07 (345)	0.15 (55)	0.17 (65)
Past violent crimes	-0.23** (226)	0.04 (345)	-0.12 (55)	-0.13 (65)
Past felonies	-0.03 (226)	0.15** (345)	0.13 (55)	0.19 (65)
Infraction Composite	0.15* (226)	0.23** (345)	0.12 (55)	0.10 (65)

Note: *n* values presented in parentheses. **p* < .05. ***p* < .01.

Table 14

Hierarchical Linear Regression Coefficients Predicting Infractions Composite

	Variable	<i>B</i>	<i>SE B</i>	β	R^2
<i>Overall Sample^a</i>					
<u>Step 1:</u>	Length of stay	3.90	0.56	0.25**	0.12
<u>Step 2:</u>	BDHI hostility	2.62	0.71	0.18**	
	IRI empathy	0.13	0.43	0.02	0.20
	IQ	-0.86	0.69	-0.06	
	Home disapproval	40.23	10.73	0.19**	
	Age of onset	-10.83	4.85	-0.11*	
<u>Total Model:</u>	<i>F</i> for change in R^2	6.78**			
<i>Sex Offender^b</i>					
<u>Step 1:</u>	Past violent crimes	-2.54	17.98	-0.01	0.06
	Length of stay	1.86	1.29	0.13	
<u>Step 2:</u>	BDHI hostility	4.72	1.55	0.28**	0.22
	Age of onset	-31.39	10.06	-0.29**	
<u>Total Model:</u>	<i>F</i> for change in R^2	10.05**			
<i>Chemically Dependent^c</i>					
<u>Step 1:</u>	Past violent crimes	2.47	0.55	0.24**	0.08
	Length of stay	25.08	11.23	0.12*	
<u>Step 2:</u>	BDHI hostility	1.91	0.66	0.15*	0.11
<u>Total Model:</u>	<i>F</i> for change in R^2	8.34*			
<i>Mental Health^d</i>					
<u>Step 1:</u>	Length of stay	11.00	2.78	0.47**	0.22
<u>Step 2:</u>	Age of onset	-46.00	24.52	-0.22	0.27
<u>Total Model:</u>	<i>F</i> for change in R^2	3.43			
<i>Capital Offender^e</i>					
<u>Step 1:</u>	Length of stay	3.03	0.61	0.50**	0.25

Note: ^a*n* = 349. ^b*n* = 108. ^c*n* = 326. ^d*n* = 56. ^e*n* = 77. **p* < .05. ***p* < .001.

Table 15

Logistic Regression Coefficients Predicting Arrest at One-Year Follow-up

	Variable	B	SE	Odds	Nagelkerke R ²
<i>Overall Sample^a</i>					
<u>Step 1:</u>	Past crimes	0.08	0.02	1.09**	
	Infraction composite	0.00	0.00	1.00**	0.17
<u>Step 2:</u>	IRI empathy	-0.03	0.01	0.97**	
	Age of onset	-0.17	0.07	0.85*	
	Home disapproval	-0.43	0.19	0.65*	0.14
<u>Total Model:</u>	Chi-square	86.42**			0.27
<i>Sex Offender^b</i>					
<u>Step 1:</u>	Past crimes	0.18	0.05	1.20**	0.26
	Infraction composite	0.00	0.00	1.00	
<u>Step 2:</u>	IRI empathy	-0.04	0.02	0.96*	
	Home disapproval	-0.75	0.25	0.47**	0.29
<u>Total Model:</u>	Chi-square	45.56**			0.40
<i>Chemically Dependent^c</i>					
<u>Step 1:</u>	Infraction composite	0.02	0.00	1.02**	
	Length of stay	-0.04	0.02	0.96*	
	Past felonies	0.16	0.10	1.17	0.21
<u>Step 2:</u>	IRI empathy	-0.05	0.01	0.95**	0.26
<u>Total Model:</u>	Chi-square	85.74**			0.39
<i>Mental Health^d</i>					
<u>Step 1:</u>	Home disapproval	-10.78	6960.29	0.00	0.46
<u>Step 2:</u>	BDHI hostility	0.05	0.04	1.05	0.11
<u>Total Model:</u>	Chi-square	13.85**			0.49
<i>Capital Offender^e</i>					
<u>Step 1:</u>	BDHI hostility	-0.05	0.03	0.95	0.09
<u>Step 2:</u>	Violent infractions	0.18	0.14	1.19	0.06
<u>Total Model:</u>	Chi-square	5.81			0.13

Note: ^an = 398. ^bn = 131. ^cn = 264. ^dn = 46. ^en = 65. *p < .05. **p < .001.

Table 16

*Logistic Regression Coefficients Predicting Re-incarceration at One- to Three-Year**Follow-up*

	Variable	B	SE	Odds	Nagelkerke R ²
<i>Overall Sample^a</i>					
<u>Step 1:</u>	Past violent crimes	-0.47	0.14	0.62**	
	Infraction composite	0.00	0.00	1.00**	0.07
<u>Step 2:</u>	IRI empathy	-0.01	0.01	0.99	
	IQ	-0.01	0.01	0.99	
	Age of onset	-0.08	0.05	0.92	0.03
<u>Total Model:</u>	Chi-square	38.03**			0.09
<i>Sex Offender^b</i>					
<u>Step 1:</u>	Past violent crimes	-0.60	0.29	0.55*	
	Infraction composite	0.00	0.00	1.00	0.10
<u>Step 2:</u>	Home disapproval	-0.27	0.21	0.77	
	Age of onset	-0.23	0.12	0.80	0.10
<u>Total Model:</u>	Chi-square	16.56*			0.15
<i>Chemically Dependent^c</i>					
<u>Step 1:</u>	Infraction composite	0.01	0.00	1.00**	0.06
<u>Step 2:</u>	Length of stay	0.01	0.01	1.01	0.02
<u>Total Model:</u>	Chi-square	17.20**			0.07
<i>Mental Health^d</i>					
<u>Total Model:</u>	Length of stay	0.05	0.02	1.05*	0.14
	Chi-square	5.95*			
<i>Capital Offender^e</i>					
<u>Total Model:</u>	Length of stay	0.08	0.03	1.08*	0.14
	Chi-square	5.31*			

Note: ^an = 578, ^bn = 131, ^cn = 264, ^dn = 46, ^en = 65. *p < .05. **p < .001.

Table 17

Summary of Significant Predictors for Infractions and Recidivism Outcomes

	Significant Regression Predictors	Significant SEM Predictors
<u>INFRACTIONS</u>		
Overall Sample	Length of stay, BDHI, Age onset, Home	<u>INFRACTIONS COMPOSITE</u> BDHI, Age onset, Home, IQ
Sex Offending	Length of stay, BDHI, Age onset	
Chemical Dependency	Length of stay, BDHI	BDHI, Age onset, Home, IQ
Mental Health	Length of stay	
Capital Offending	Length of stay, Past crimes	
<u>ARREST IN ONE YEAR</u>		
Overall Sample	Infractions, Past crimes, IRI, Home, Age onset	<u>RECIDIVISM FACTOR</u> Infractions, IRI
Sex Offending	Infractions, Past crimes, IRI, Home	
Chemical Dependency	Infractions, Length of stay, Past felonies, IRI	Infractions, IRI, BDHI, IQ
Mental Health	Home disapproval	
Capital Offending	BDHI	
<u>RE-INCARCERATION WITHIN ONE TO THREE YEARS</u>		
Overall Sample	Past violent crimes, Violent Infractions	
Sex Offending	Past crimes, Infractions	
Chemical Dependency	Infractions	
Mental Health	Length of stay	
Capital Offending	Length of stay	

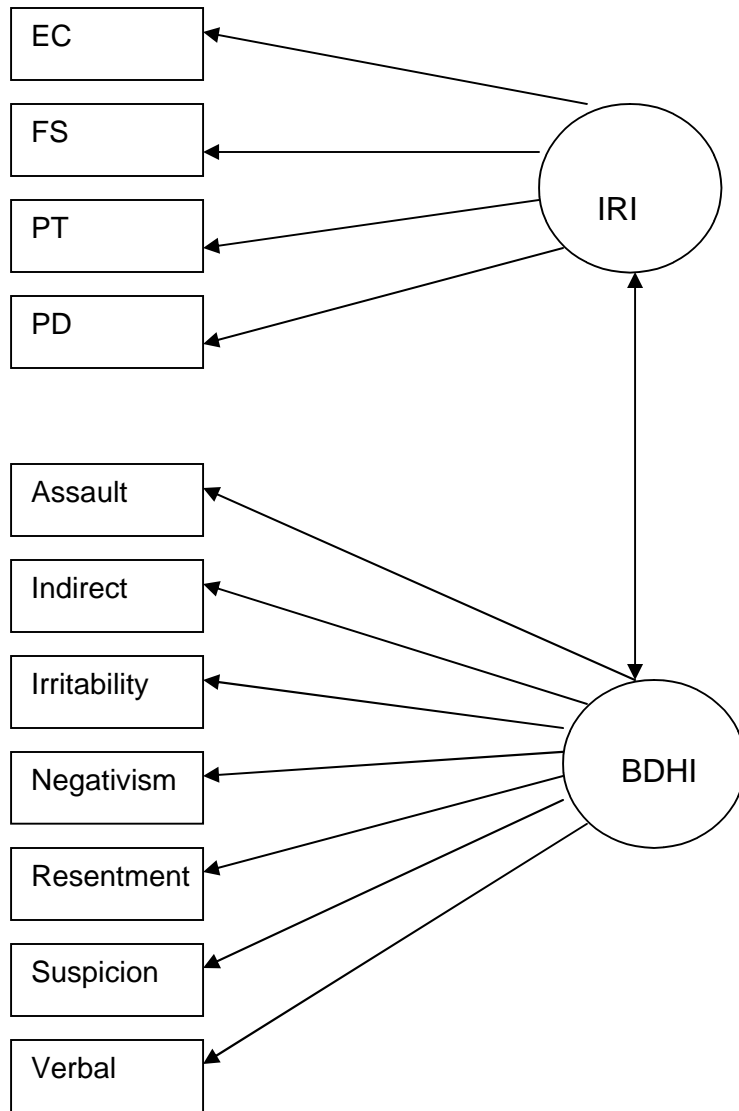


Figure 1. Underlying factor structure of measures of hostility and empathy.

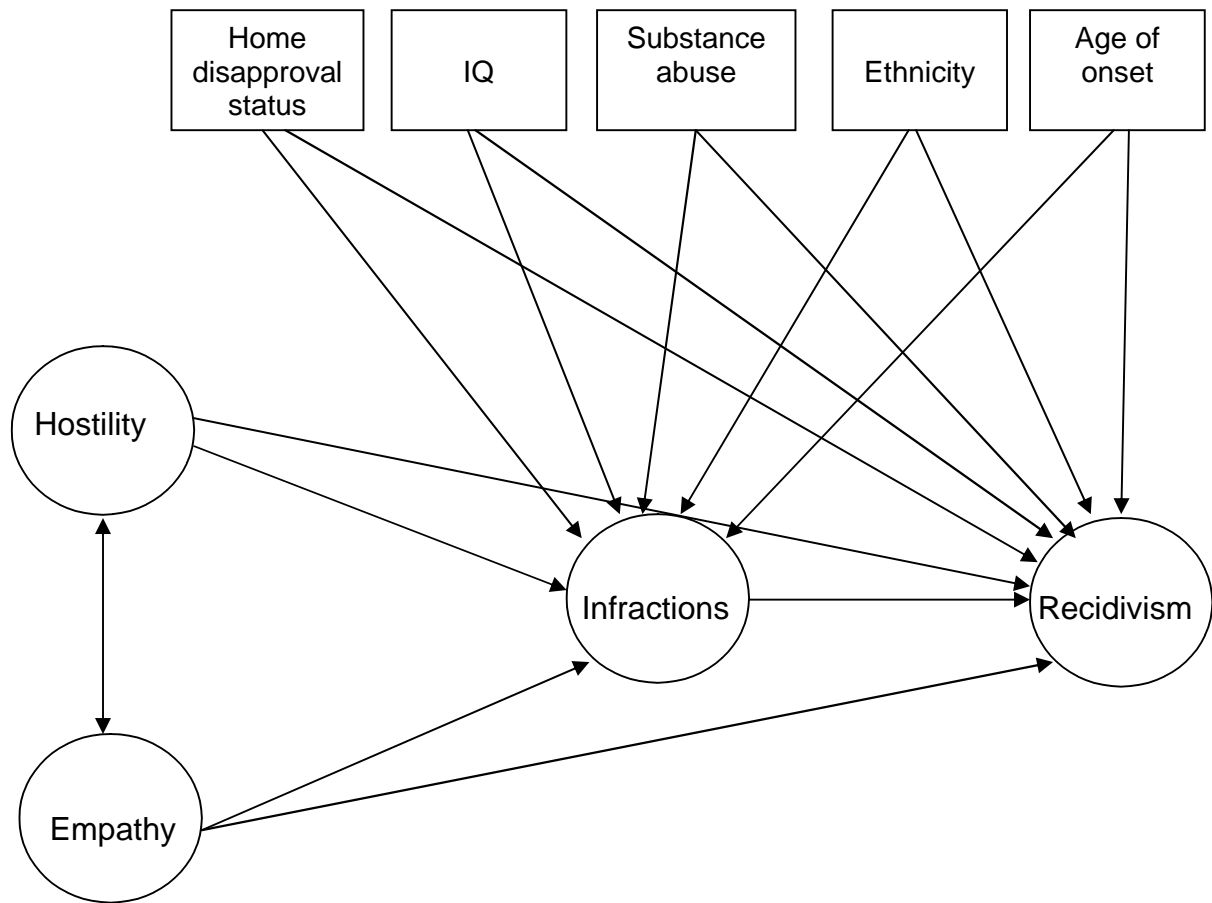


Figure 2. The proposed relationship between psychosocial and personality variables, institutional behavior, and recidivism.

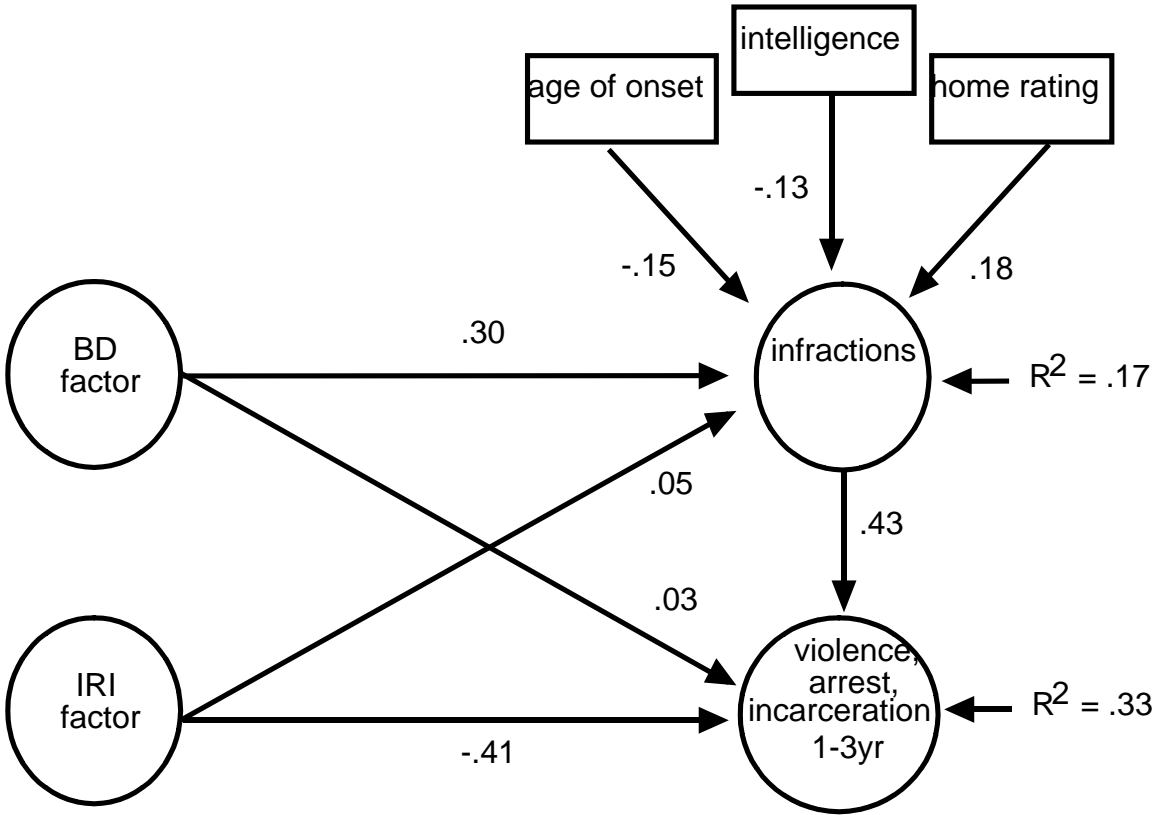


Figure 3. The relationship between psychosocial and personality variables, institutional behavior, and recidivism (overall sample).

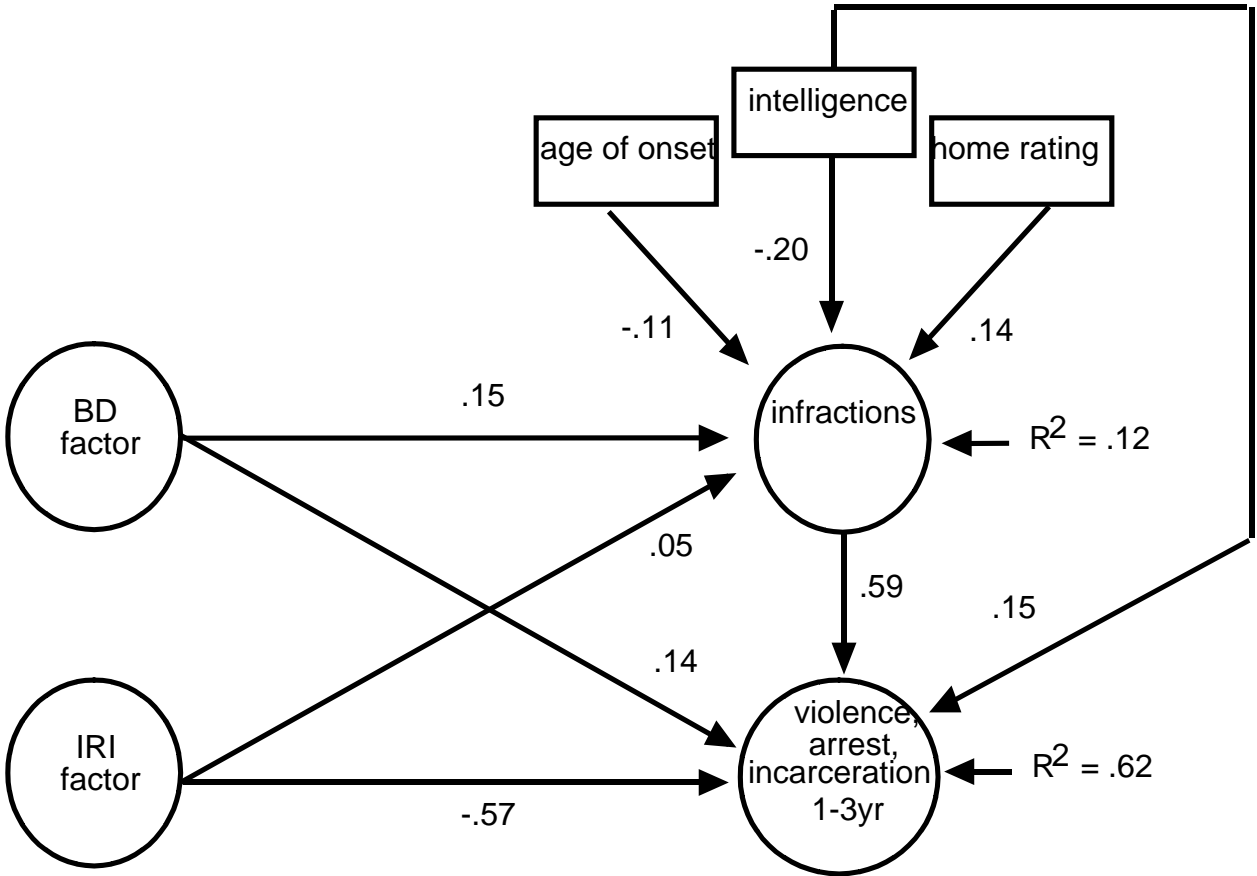


Figure 4. The relationship between psychosocial and personality variables, institutional behavior, and recidivism among chemically dependent youth.

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