

A VALIDATION STUDY OF THE POSITIVE ACHIEVEMENT CHANGE TOOL (PACT)

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by

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## **DEDICATION**

To my parents, Albert and Maxine McKenzie.

All I am, or ever dared hope to be, is because of you.

Thank you.

## ABSTRACT

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The Juvenile Justice and Delinquency Prevention Act (JJDP, 2002) mandates the use of risk assessments in juvenile justice proceedings. The Texas Juvenile Justice Department (TJJD, 2015) has approved the use of the Positive Achievement Change Tool (PACT), a relatively recently developed juvenile risk assessment instrument. Although promising, much of the published validation studies of the PACT have been limited to the population in which it was developed (Baglivio, 2009; Baglivio & Jackowski, 2013; Winokur-Early, Hand, & Blankenship, 2012). The current study examined the PACT's predictive validity for recidivism in a sample of Texas juvenile offenders ( $n = 549$ ). Additional analyses assessed for any gender/ racial differences in the PACT risk scores' predictive abilities as well as explored the predictive validity of these scores for continued probation involvement and specific treatment outcomes.

Initial PACT assessment data were collected on juveniles aged 10 to 18. Outcomes on re-offending, probation involvement, and treatment referrals within 12-months of the initial PACT administration were also obtained. The small sample of recidivists precluded some gender analyses, such that, of the 77 juveniles who recidivated, only 10 were female. Findings suggest that the Overall Risk to Reoffend level (AUC = .621), Criminal History (AUC = .612), and Social History (AUC = .603) scores demonstrated similar predictive abilities for the total sample. Observed AUC effect sizes for the male-only, minority-only, and non-minority samples were also in the small to moderate range.

Multiple regression analyses also consistently revealed High Risk juveniles were between three to five times more likely to recidivate than Low Risk juveniles. The Overall Risk to Reoffend level also predicted and differentiated between continued probation involvement, the number of different intervention referrals received, and total intervention referrals. The risk levels did not predict total intervention success. The Criminal History and Social History domain scores were also variable predictors of probation and treatment outcomes.

Overall, the results of this study provide continued support for the use of the PACT as a valid measure of predicting risk for recidivism with Texas juvenile offenders. Implications for use and implementation of risk/needs assessment and future research are discussed.

**KEY WORDS:** Risk assessment, Recidivism, Positive Achievement Change Tool, Juvenile justice system.

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## CHAPTER I

### Introduction

The reauthorization of the Juvenile Justice and Delinquency Prevention Act (JJDP A) strongly recommends the "...design and utilization of risk assessment mechanisms to aid juvenile justice personnel in determining appropriate sanctions for delinquent behavior" (JJDP A, 2002, p. 18). Throughout the text of this act, lawmakers frequently reference the identification of juveniles "at-risk" for delinquent behavior as a critical objective of juvenile justice systems. Inherent in this statement is the implicit understanding that there exist factors, at the individual, familial, community, and population level, which may increase the likelihood of delinquent and/or criminal behavior. With this terminology in JJDP A, lawmakers underscore the importance of the use of risk assessment instruments within the juvenile justice population.

While the impetus for the use of risk assessments in the juvenile justice system is relatively recent, psychologists and judicial decision-makers within the adult forensic arena have long been employing their use. Between the late 1970s and early 1980s, the practice of conducting risk assessments was addressed within the state and federal court systems (Conroy & Murrie, 2007). Through a series of landmark cases, the United States Supreme Court upheld the practice of risk assessments by qualified professionals to determine level of risk and propensity for future criminal and/or delinquent behavior, at both the adult (*Jurek v. Texas*, 1976) and the juvenile (*Schall v. Martin*, 1984) level.

Since then, the development and routine use of risk assessment practices continue to serve an array of purposes including predicting recidivism; guiding sentencing, release, parole, and probationary decisions; as well as proving useful in civil matters such as

fitness for duty evaluations (Conroy, 2003). Further, the field has moved away from instruments that broadly assess risk to specialized instruments which purport to measure risk for a certain type of criminal behavior, such as intimate partner violence (Dutton & Kropp, 2000; Messing, & Thaller, 2012) and sexual offending (Barbaree, Seto, Langton, & Peacock, 2001; Tully, Chou, & Browne, 2013), or within a specified population, such as juveniles and forensic psychiatric inpatients (Harris, Rice, & Cormier, 2002; Snowden, Gray, Taylor, & Fitzgerald, 2009).

Following judicial acceptance of risk assessment instruments as evidence-based practice in adult legal proceedings (National Center for State Courts, 2007), many states now require their use in juvenile proceedings. According to the National Center for Juvenile Justice (2006), over 60% of states mandate the use of risk/needs assessment(s) with juveniles under their jurisdiction at some point throughout juvenile proceedings. Of the states that do not require their use, statutes are worded such that risk assessments are recommended as part of an evidence-based best practices approach.

In accordance with the Texas Administrative Code (37 TAC §341.20, 2014), a research-supported risk/ needs assessment is required before the disposition of a case for any juvenile under the jurisdiction of a juvenile probation department. The recently adopted revision (37 TAC §341.502), effective January 2017, further requires the risk/needs assessment be conducted before each disposition in a juvenile's case, if there is more than one, and at least once every six months. In addition, the similarly revised 37 TAC §341.504 also requires that the results of the assessment be used to guide decision-making throughout the case management process. Additionally, each juvenile probation department must establish case management policies which, at a minimum, consider the

juvenile's risk level, criminogenic needs, and responsivity factors, all information likely to be obtained from the risk/needs assessments. With the growing legal reliance on risk assessments, the need for reliable, valid, and empirically supported instruments has never been more salient.

### **Historical Development and Evolution of Risk Assessments**

Kraemer et al. (1997) defined risk assessment as the “process of using risk factors to estimate the likelihood (i.e. probability) of an outcome occurring in a population” (p.340). The type of risk assessment being conducted is determined by the outcome of interest, such as criminal reoffending, the focus of this review. Notwithstanding the relative recent establishment of this definition, the assessment of risk, and specifically violence or criminal risk, ostensibly has its roots in the early 19th century school of positivist criminology (Conroy & Murrie, 2007). Cesare Lombroso, an Italian criminologist of his time, suggested that physical characteristics could be used to both identify violent criminals and aid in the determination of punishments appropriate to the offender. Thereafter, the use of risk assessment tools and procedures continued to increase in both scope and specificity, particularly as more jurisdictions were legally requiring their use (Skeem & Monahan, 2011).

Offender risk assessment instruments are currently within their fourth generation of evolution. Before a discussion of how these instruments have developed is provided, an understanding of the risk factors Kraemer et al. referenced warrants explanation. Risk factors are any variables that increase the probability of the outcome of interest occurring (Vincent, Perrault, Guy, & Gershenson, 2012), with the literature differentiating between two types of risk factors, *static* and *dynamic* (Bonta, 1996).

*Static risk factors* are those fixed characteristics of the offender, which are resistant to change and unsuited to intervention (Bonta, 1996). These can include demographic variables (e.g., gender, age, and race) as well as the individual's criminal history. Despite the term "static" conveying these characteristics as immutable, they can and do change (e.g., the individual ages and/or their criminal history lengthens); however, the classification of a risk factor as static is generally understood to refer to those that cannot be improved through intervention (Mann, Hanson, & Thornton, 2010). In contrast, *dynamic risk factors* (Andrews, Bonta, & Wormith, 2006), are characteristics that change, with, for example, intervention or through developmental maturation (Douglas & Skeem, 2005; Beech, Erikson, Friendship, & Ditchfield, 2001; Marques, Day, Wiederanders, & Nelson, 2002). Examples of dynamic risk factors include antisocial attitudes, substance abuse, and interpersonal conflict.

The delineation of risk assessment instruments into generations are based, in part, on their use of these static and dynamic risk factors in predicting future offending. Generally speaking, first generation risk assessments did not consider static or dynamic factors, as they are now defined. Following the birth of the psychology and criminology disciplines, for much of the 19th and early 20th century, the assessment of risk was guided by that of professional judgment and subject to the ideologies of the evaluator. Thus, the first generation risk assessment process was based primarily in the training, experience, and intuition of those working with the judicial system and with offenders. While practitioners may very well have been using the now identified risk factors in their decision-making, they were not universally considered or required as part of risk assessments.

It was not until the second generation that the common variables associated with risk were identified and specifically evaluated as part of assessing risk. With second generation risk measures, the field began diverging from unstructured professional judgment and intuitive reasoning toward the use of structured approaches to identifying and quantifying risk factors. Some hypothesize that this was merely a natural progression of the field advancing toward more scientific practice. Others believe it was partially induced by Meehl's (1954) seminal text which provided a reasoned evaluation of whether clinical judgment or actuarial (statistical) measures yielded better predictive outcomes in the field of psychology.

Litwack (2001) defines actuarial assessments as those "based on supposedly validated relationships between measurable predictor and outcome variables and ultimately determined by fixed, or mechanical, and explicit rules" (p. 412). Thus, actuarial risk assessment instruments facilitate a systematic and algorithmic analysis of the factors empirically supported in predicting recidivism in the population of interest. This approach allows for inferences to be made about individual members of the group with a certain degree of statistical accuracy.

Despite evidence strongly in favor of the actuarial approach (Grove & Meehl, 1996), the argument of which approach is best continues to dichotomize practitioners and researchers. Nevertheless, the impact of Meehl's monograph spurred the field, and the growing risk assessment sub-discipline, to develop risk assessment measures that rely on actuarial or statistical principles. Research demonstrating the utility and efficacy of actuarial risk measures over unstructured clinical professional judgment (Bonta, Law, &

Hanson, 1998; Andrews, Bonta & Wormith, 2006; Grove, Zald, Lebow, Snitz, & Nelson, 2000) continues to contribute to the fervent regard for actuarial instruments.

Consequently, second generation risk assessments, and beyond, can be defined as those that are grounded in evidence-based scientific principles and identify common variables associated with criminal reoffending. While useful and arguably somewhat accurate in predicting re-offense, second generation risk measures are limited in their focus on primarily static factors. Given that we now recognize that static factors only inform risk and do not necessarily aid in its management, their utility is somewhat limited.

Third generation measures improve on risk prediction by continuing to be grounded in empirical data and focusing on both static and dynamic risk factors. These third generation instruments are attempts at being sensitive to the changing needs of the offender (Bonta & Andrews, 2007). For instance, an offender's employment status, a factor not considered in second generation measures, has been demonstrated to contribute risk for re-offense (Bloom, Redcross, Zweig, & Azurdia, 2007; Graffam, Shinkfield, & Lavelle, 2012; Tripodi, Kim, & Bender, 2009; Zweig, Yahner, & Redcross, 2010), such that, offenders who are unemployed are more likely to re-offend than offenders who maintain some form of employment. Thus, the changing nature of dynamic variables contributes to significantly influence the risk for re-offense.

Presently, we are in what many consider to be the fourth generation of risk assessments. The hallmark of these instruments is their integration of static and dynamic risk factors as part of their assessment model. The main distinction, however, between third and fourth generation assessments, is the latter also accounts for other offender

factors associated with recidivism and intervention outcomes, such as criminogenic needs and protective and responsivity factors (see page 7; Motiuk, 1998, 1997a, 1997b).

The theoretical foundation underlying most fourth generation risk assessments is that of the *Risk-Need-Responsivity (RNR)* model (Andrews, Bonta, & Hoge, 1990; Bonta & Andrews, 2007). The RNR model provides an empirically-validated structure guiding modern risk assessments instruments in achieving two main goals. First, all basic risk assessments seek to determine the level of risk for re-offense. Proceeding from this determination of risk, the secondary goal of an RNR-based risk assessment is to evaluate the mechanisms by which the probability of re-offense can be mitigated by identifying the factors that influence the likelihood of the individual recidivating.

The *risk principle* endorses the premise that the level of intervention provided should very closely match the risk level of the offender, such that offenders at the highest level of risk receive the most intensive supervision and treatment services. The *needs principle* helps facilitate this by identifying the offender's most relevant criminogenic needs. Criminogenic needs refer to the dynamic risk factors that have demonstrated direct empirical association with delinquent and/or criminal behavior, such as substance use (Andrews, Bonta, & Wormith, 2006; Dowden & Brown, 2002) and antisocial cognitions and lifestyle (Andrews & Bonta, 2010; Hanson & Harris, 2000; Worling & Curwen, 2000). Conversely, noncriminogenic needs are also dynamic risk factors (e.g., low self-esteem); however, they are generally considered as discretionary targets for intervention, likely due to their empirically hazy relationship to criminal offending (Dowden & Andrews, 2000; Hanson, 2000). In addition to identifying the offender's risk factors, an awareness of other risk-related variables is also part of the needs identification process.

The eponymously titled protective factors are essentially risk-reducing variables, in that they interact to buffer the influence of risk factors to decrease the likelihood of offending behaviors (Jenson & Fraser, 2011; Rutter, 1987; Vanderbilt, Adriaance, & Shaw 2008). These may include characteristics of the individual, their family, peer groups, the community, and the wider environment (Carr & Vandiver, 2001; Desmarais, Nicholls, Wilson, & Brink, 2012; Lodewijks, de Ruiter, & Doreleijers, 2009).

The *responsivity principle* specifically guides the provision of intervention to match the risk, needs, and protective factors of the offender. Much like Lombroso suggested centuries earlier, the responsivity of services (treatment and/or supervision) should be tailored to the individual's personal, biological, and cultural factors to enhance the likelihood of success of the services. Fourth generation risk assessment instruments specifically attempt to identify these responsivity factors (Andrews, Bonta, & Hoge, 1990; Bonta, 1995). These factors are characteristics of the offender that may influence their ability to respond to intervention and treatment and should be considered part of the decision-making process to inform the appropriateness services provided. Examples of responsivity factors include cognitive abilities, motivation to change, and learning styles (Vincent, Guy, and Grisso 2012; Ward & Stewart, 2003). In matching the offender's risks and needs to the services provided and capitalizing upon protective factors, it is expected that the risk for future criminal and delinquent behavior will be reduced.

Bonta and Andrews also suggest a fourth component within this framework, which is often left remiss by most when referencing the RNR model. They consider professional discretion as a necessary component of the RNR model (Ward & Stewart, 2003; Vincent, Guy, & Grisson, 2012), such that it allows for flexibility and innovation in

conceptualizing risk, risk factors, and treatment needs of offenders at both the personal and population level. Thus, some of these fourth generation risk assessments venture into the territory of what some consider to be structured professional judgment in that they utilize both actuarial methodology as well as recognizing the utility of professional judgment. Herein, the utility and unity of both actuarial and clinical judgment approaches is emphasized.

If risk assessment instruments (i.e., fourth generation) are entering the realm of risk management practices, which is the primary objective of the RNR model, then arguably, there must be room for professional judgment. As Dvoskin and Heilbrun (2001) argue, if the goal of assessing risk is purely to determine the probability of recidivism, then a purely actuarial approach is recommended. However, if the purpose of the risk assessment is also to provide an analysis as to how the risk for recidivism may be mitigated, a clinical assessment approach may be warranted.

### **Guidelines for the Use of Risk Assessments**

Rogers (2000) proposed that two main principles should guide the use of risk assessment instruments: that the instrument of choice should be fair and balanced and should utilize relevant and well-established base rates for comparison. Bonta (2002) expanded this and offered 10 guidelines, encompassing and widening Rogers' scope. Germane to the current study is Bonta's second guideline that simply states, "risk assessments should demonstrate predictive validity" (p. 358). The validity of any instrument refers to how well it measures what it is designed to measure. With regard to the predictive validity of a risk assessment instrument, it must empirically predict the outcome(s) for which it was designed, namely future criminal and/or delinquent behavior.

Further, this predictive validity must be observed in research studies by both the test developers as well as independent researchers.

Therein, not only should risk assessments include a process of identifying factors empirically associated with risk for re-offense but they should also provide a means for comparing the individual against a comparable population to provide a reliable and valid prediction of the likelihood that the individual will reoffend. In summary, and in accordance with many statutory requirements,

“an evidence-based risk assessment process employs one or more standardized, empirically-validated risk assessment instruments and professional judgment, to collect and use characteristics of the [offender] and the [offender’s] circumstances in making the best decisions for intervention and management of the case to reduce risk” (Vincent, Guy, & Grisso, 2012, p. 37).

Legally, risk assessment instruments are often required at some point throughout the judicial system, particularly at the juvenile level. Juvenile justice agencies have an array of instruments from which to choose; however, the validity of many of these instruments are highly variable across and within specific juvenile justice populations. To attempt to address this issue, a brief review of the psychometric properties of existing risk assessment instruments, with a specific focus on their predictive validity, is necessary.

Mossman (1994) proposed that the best method of assessing a measure’s predictive validity is the Receiver Operating Characteristics (ROC) analysis, which provides a graphical plot of the true positive rate against the false positive rate. Increasingly, many researchers are turning to the use of ROC analyses to evaluate both

the sensitivity and of individual instruments in predicting recidivism (Rice & Harris, 1995). Preeminent researchers in this area have designated ROC analyses as “the preferred measure of predictive or diagnostic accuracy” (Rice & Harris, 2005, p.618). Consequently, this analytic procedure is routinely used to provide an Area Under the Curve (AUC) index or effect size of risk assessment instruments’ predictive properties.

The AUC effect size of an instrument indicates the probability that a randomly selected offender who eventually recidivates will have a higher score on the instrument than a randomly selected offender who does not recidivate. Across the literature, measures of effect size are regularly represented by the Cohen’s *d* (1988) statistic; for consistency, Rice and Harris adapted Cohen’s qualitative descriptions for *d* values to AUC values. Accordingly, AUC values are categorized as small (.556), moderate (.639), and large (.714). For the purposes of this review, the predictive validity of the instruments specifically reviewed here will be measured by their AUC values.

### **Predictive Validity of Adult Risk Assessments**

Though not the focus of this review, much of the literature on risk assessment is within the adult domain, with many of the more renowned risk assessment instruments being developed and normed on adult populations. The roots of juvenile risk assessment are embedded within the evolution of adult risk assessments. Meta-analytic reviews of adult risk assessment instruments provide contradictory but heartening results. To the field’s credit, comparison of adult risk assessment instruments across the four generations yield somewhat predictable findings, that is, consistently increasing predictive validity (Andrews, Bonta, & Wormith, 2006). Instruments that include some form of structured

professional judgment and/or actuarial principles considerably outperform unstructured clinical judgment in the accuracy of risk prediction (Hanson & Morton-Bourgon, 2009).

Somewhat concerning, however, are the inconsistent findings of the predictive validity of well-established third and fourth generation instruments. Despite the prevalent utilization of these measures, meta-analytic findings suggest the predictive accuracy of these instruments varies according to the nature of their use (e.g., recidivism defined in different ways), the specific population of interest (e.g., general offenders versus sexual offenders), and the demographic characteristics (e.g., race or gender) of the offenders (Dernevik, Beck, Grann, Hogue, & McGuire, 2010; Fazel, Singh, Doll, & Grann, 2012; Fazel, Sjöstedt, Långström & Grann, 2006).

In one such recent systematic review of 68 studies, with a combined sample of over 25,000 participants, Singh, Grann, and Fazel (2011) identified the nine most commonly used risk assessment instruments and compared their predictive accuracy. Of the nine, one was an instrument specifically developed and normed for use with a juvenile offender population, the *Structured Assessment of Violence Risk in Youth* (SAVRY; Borum, Bartel & Forth, 2002, 2003). Other primarily adult instruments identified, but not limited to, included the *Historical, Clinical, Risk-20* (HCR-20; Webster, Douglas, Eaves, & Hart, 1997), the *Violence Risk Appraisal Guide* (VRAG; Harris, Rice, & Quinsey, 1993), the *Level of Service Inventory – Revised* (LSI-R; Andrews & Bonta, 1995), the *Psychopathy Checklist – Revised* (PCL-R; Hare, 2003), the *Sexual Violence Risk – 20* (SVR-20; Boer, Hart, Kropp & Webster, 1997), and the *Sex Offender Risk Appraisal Guide* (SORAG; Quinsey, Harris, Rice & Cormier, 2006).

In comparing the performance of these instruments, Singh et al. found that the instruments designed to predict risk in a specific population performed the best. The instruments with the three highest median AUC values, across all the studies reviewed, were the SVR-20 (AUC = .78), SORAG (AUC = .75), and the VRAG (AUC = .74). All three of these instruments were developed for use with a specific population of offenders, the SVR-20 and SORAG for sexually violent offenders and the VRAG for non-sexually violent offenders.

Even more striking, in comparing these instruments using varying measures of predictive validity (e.g., AUCs, diagnostic odds ratios, and positive/negative predictive values), the SAVRY, developed for use specifically with juvenile offenders, demonstrated the highest predictive validity overall. Conversely, the LSI-R, developed to predict general adult offending, and the PCL-R (not designed for the purpose of risk assessments), consistently yielded the lowest predictive validity, when measured either by their respective AUC values or the summary comparison across the four measures.

Nevertheless, despite these findings, all the instruments demonstrated rates of predictive accuracy that were statistically better than chance. Fortunately for the risk assessment discipline, this is generally consistent with previous meta-analytic reviews of these and other adult risk assessment instruments (Hanson, 2009; Schwalbe, 2007; Yang, Wong, & Coid, 2010). While there is no unified consensus on which adult risk assessment instrument performs the best, the better than chance performance of many of these instruments provides support for their continued use.

## **Predictive Validity of Juvenile Risk Assessments**

In their review of juvenile risk assessment instruments, the Office of Juvenile Justice and Delinquency Prevention (OJJDP, 2015) concluded that while a risk assessment instrument may generally demonstrate equitability, fairness, reliability, and predictive validity (i.e. the hallmark gold standards), limitations exist such that there is “no one-size-fits-all assessment tool available” (p. 8). They further caution that not all risk assessment measures accurately predict risk across all juvenile populations. Within the juvenile risk assessment arena, the most common instruments are the *Youth Level of Service/ Case Management Inventory* (YLS/CMI; Hoge & Andrews, 2002; Hoge & Andrews, 2011), the *Structured Assessment of Violent Risk in Youth* (SAVRY; Borum, Bartel, & Forth, 2003), and the *Psychopathy Checklist–Youth Version* (PCL: YV; Forth, Kosson, & Hare, 2003). Given the general similarity of these instruments, for brevity, only the first two are reviewed here.

**Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge & Andrews, 2002; Hoge & Andrews, 2011).** The Youth Level of Service/ Case Management Inventory (YLS/ CMI) is one of the most widely researched juvenile risk assessment instruments. The YLS/CMI was developed from the *Level of Service Inventory-Revised* (LSI-R; Andrews & Bonta, 2000), an empirically validated adult assessment of risk of recidivism. The YLS/CMI is an actuarial-based assessment checklist designed for use with adolescents aged 12 through 18, to be administered primarily by juvenile probation officers. It is comprised of 42 items reflecting empirically-supported static and dynamic risk factors and criminogenic needs. These items are categorized into eight subscales- Prior and Current Offenses, Substance Abuse,

Family/ Circumstances/ Parenting, Education, Leisure/ Recreation, Peer Associations, Personality/ Behavior, and Attitudes/ Orientation.

Each of the items is dichotomously coded with the rater indicating whether the factors and/or needs are present or absent. Scores are then summed to provide an overall risk/ need level score categorized as Low, Moderate, High, or Very High. In addition, the summed items also produce index scores across the eight subscales, with qualitative categorizations similar to the overall risk/ need level score. Cutoff scores were created from the original normative sample: 263 Canadian male and female juveniles.

The second edition of the YLS/CMI now includes a sample of over 12,000 American juveniles allowing for a more accurate normative group for comparisons to the juvenile offender population in the United States. Although scores on the instrument are statistically derived, Hoge and Andrews also provided for a “professional override” feature of the YLS/CMI noting that the instrument was not designed to be “...used in a rigid fashion to dictate decisions based on a scoring algorithm” (Hoge & Andrews, 2002, p. 285). Thus, the scores are to be interpreted within the scope of professional judgment.

In a validation study of the YLS/CMI, a multidisciplinary team of mental health professionals completed independent YLS/CMI evaluations of a sample of 107 Canadian juvenile offenders (Schmidt, Hoge, & Gomes, 2005). Using the recommended receiver operating characteristic (ROC) analysis, AUC effect sizes obtained for the overall risk/needs level score was .67, above the moderate range based on Rice and Harris’s (1995; 2005) recommended classification. Using an American sample of juvenile offenders, researchers obtained an AUC coefficient of .619, corresponding to the small to moderate range (Onifade, Davidson, Campbell, Turke, Malinowski, & Turner, 2008).

Other studies upheld the predictive validity of the YLS/CMI yielding AUC effect sizes within similar ranges in both national and international samples. One such study in England (Rennie & Dolan, 2010) demonstrated an AUC effect size of .67 whereas another with a sample of Singaporean juveniles was .64 (Chu et al., 2015).

Consistent with findings from the adult risk assessment literature, research suggests that the YLS/CMI may perform differently across gender and racial groups. A meta-analytic review of five studies utilizing the YLS/CMI indicated better predictive abilities for females (AUC = .827) than for males, .746 (Andrews et al., 2011). Similarly, Onifade, Davidson, and Campbell (2009) found that while there were no differences in the AUC values obtained between the genders (males<sub>AUC</sub> = .61, females<sub>AUC</sub> = .68) or racial groups (Caucasian<sub>AUC</sub> = .66, African American<sub>AUC</sub> = .63), there was an significant interaction between these demographic factors with significant differences observed in the AUC values between African American males and Caucasian females. Taken together, the evidence suggests that the YLS/CMI may perform differently with respect to certain demographic characteristics. Broadly speaking, the predictive validity of the YLS/CMI continues to be supported for general use with juvenile justice populations.

**Structured Assessment of Violent Risk in Youth (SAVRY; Borum, Bartel, & Forth, 2003).** Much like the YLS/CMI, the *Structured Assessment of Violent Risk in Youth* (SAVRY; Borum, Bartel, & Forth, 2003) is a structured professional judgment risk assessment instrument. Unlike the YLS/CMI, it was designed specifically for professionals from a wide variety of disciplines including social workers, psychologists, and probation officers to utilize. The SAVRY is structured across two main categories, Risk and Protective factors, reflecting the empirical correlates associated with juvenile

recidivism. The risk factors encompass both static and dynamic risk variables including historical, social/contextual, and individual sub-scales.

Scoring for the SAVRY is recommended to be done following an interview with the youth and a review of collateral records. Raters score each item based on its severity, recency, and frequency, while considering the applicability of contextual circumstances. Across the risk factors, items are coded on a three-point scale (low, moderate, and high), whereas the protective factors are coded according to a two-level structure (present or absent). Summed scores for each of the factors (risk and protective) and for each of the risk subscales can be obtained and used. The test developers, however, recommend practitioners consider their ratings across each item and make a professional judgment-based summary risk rating (SRR) of either Low, Moderate, or High. Thus, more credence should be given to the SRR rather than the total factor (risk/ protective) or sub-scale scores.

Since its introduction to the juvenile risk assessment arena, the SAVRY has demonstrated moderately strong predictive validity across varying populations and contexts (Vincent, Chapman, & Cook, 2011), even outperforming other risk assessment instruments (Singh, Grann, & Fazel, 2011). Meyers and Schmidt (2008) evaluated the SAVRY to determine how well it predicted general, nonviolent, and violent reoffending, one year and three years post assessment. All AUC effect sizes obtained ranged from moderate to high with this sample. Specifically, general recidivism after one year was .75, and, after three years, .76. Differences between violent and nonviolent recidivism were most apparent. At one year, AUC effect sizes for nonviolent recidivism was .80 and violent recidivism was .66. After three years, the values reversed with AUC values of .68

for nonviolent and .77 for violent recidivism. Splitting the sample by gender and/or racial groups also yielded similarly moderate to large AUC values. These results indicate that the SAVRY is a robust predictor of juvenile recidivism and may even be a better predictor of specific types of recidivism.

In a study examining the SAVRY's gender neutrality, Penney, Lee, and Moretti (2010) observed the SAVRY comparably predicted violent and nonviolent recidivism between genders, with AUC values ranging from .65 to .76. Observed differences between the genders were non-significant. Similar to the YLS/CMI, the SAVRY also demonstrated moderate predictive validity with juvenile offender populations outside of North America for both violent and nonviolent recidivism (Chu, Goh, & Chong, 2015; Dolan & Rennie, 2008).

In a unique assessment, Australian researchers examined the SAVRY's predictive validity across an ethnically diverse sample of Australian juvenile offenders (Shepherd, Luebbers, Ferguson, Ogloff, & Dolan, 2014). Juvenile offenders in this sample were differentiated into three groups- English-Speaking Background (ESB), Culturally and Linguistically Diverse (CALD), and Indigenous and Torres Strait Islanders [IND]. Across these three groups, using either the summed total Risk factor score or the Summary Risk Rating (SRR), the SAVRY performed comparably to previous research for ESB and IND groups only (AUC values ranging from .66 to .81), for both general and violent recidivism. For the Culturally and Linguistically Diverse (CALD) group, the SAVRY performed notably poorly (highest AUC value .50), regardless of which score was used, i.e. total risk or SRR, or by general or violent recidivism. The authors hypothesized that the poor performance of the SAVRY with this group of offenders was

likely a result of the broad heterogeneity of ethnic backgrounds of members of this sample. The results, however, suggest that multicultural awareness and sensitivity may influence the performance of the SAVRY, particularly given that the administration relies on professional judgment.

Although this latter finding calls for more research of the SAVRY's predictive validity with certain populations of offenders, the research base clearly establishes the SAVRY as a useful tool for predicting juvenile recidivism. Further, providing support for the SAVRY, is its use extending to predict other outcomes such as disruptive and violent behaviors in residential placements (Gammelgård, Koivisto, Eronen, & Kaltiala-Heino, 2008; Lodewijks, Doreleijers, de Ruiter, C., & Borum, 2008) and probation and treatment outcomes (Childs & Frick, 2016; Childs, Ryals, Frick, Lawing, Phillippi, & Deprato, 2013).

Practitioners involved in the juvenile justice system needing to conduct risk assessments have an array from which to choose. The onus is on practitioners to select the instrument that is most reliable and valid for the population of interest. Across multiple studies, the SAVRY, YLS/CMI, and the other heavily researched risk assessment instrument, the Psychopathy Checklist–Youth Version (PCL: YV; Forth, Kosson, & Hare, 2003) consistently yield AUC values within the moderate range in predicting general, violent, and nonviolent recidivism across varying national and international juvenile offender populations (Catchpole & Gretton, 2003; Hilterman, Nicholls, & van Nieuwenhuizen, 2013; Olver, Stockdale, & Wormith, 2009; Schmidt, Campbell, & Houlding, 2011; Welsh, Schmidt, McKinnon, Chattha, & Meyers, 2008). Given these findings, there exist adequate measures for practitioners to utilize in

predicting specific outcomes. Science, however, is nothing but progressive and juvenile risk assessment instruments continue to proliferate. As such, this project proposes to investigate the predictive validity of a relatively new juvenile risk assessment instrument.

### **The Positive Achievement Change Tool (PACT)**

The *Positive Achievement Change Tool* (PACT) is a fourth generation risk assessment instrument that was developed in conjunction with the Florida Department of Juvenile Justice (FDJJ) and Assessment.com, a proprietary vendor. As noted previously, much of the preexisting risk assessment instruments were developed for adult populations. Spurred in part by research indicating significantly better predictive validity when risk assessment instruments are used with the population for which the measure was developed, the PACT was developed solely for use with juvenile offender populations. Further, it is derived from the principles outlined in the increasingly dominant RNR paradigm. The PACT uses the empirically validated *Washington State Juvenile Court Assessment, Back On Track!* (Washington State Institute for Public Policy, 2004) as a foundational basis guiding item content (Baglivio, 2009). Additional questions were also included to further parse the static and dynamic risks, criminogenic and noncriminogenic needs, and protective factors of the juvenile being assessed.

The final PACT product yielded two general versions, the 46-item PACT Pre-Screen and the 126-item PACT Full Assessment. Items on both versions of the PACT span domains which reflect the “Big Eight” risk factors and other criminogenic needs that have been empirically established (Andrews & Bonta, 2003; 2010). The PACT Full yields a more comprehensive assessment across 12 domains- (1) record of referrals, (2), gender, (3A), school history, (3B), current school status, (4A) historic use of free time,

(4B) current use of free time, (5A) employment history, (5B) current employment, (6A) history of relationships, (6B) current relationships, (7A) family history, (7B) current living arrangements, (8A) alcohol and drug history, (8B) current alcohol and drugs, (9A) mental health history, (9B) current mental health, (10) attitudes/ behaviors, (11) aggression, and (12) skills. While not all items contribute to the risk scores, they highlight specific need areas and contribute to the recommendations provided for intervention. The PACT Pre-Screen yields four domains only- record of referrals, social history, mental health, and attitude/ behavior indicators.

Both versions of the PACT produce three risk metrics, the “Overall Risk to Reoffend” level and two domain scores, Criminal History and Social History. The Criminal History score reflects the record of referrals domain, in which, there are twelve indicators (see Table 1), that quantify the youth’s history of referrals for criminal and/or delinquent behavior. Each indicator is individually coded to provide a numerical classification. For each of these indicators, the youth’s history is coded with higher numerical coding responding to increasing criminality. As an example, the age at first offense coding system produces a score range as follows: over age sixteen (1), sixteen (2), fifteen (3), thirteen to fourteen (4), and twelve or under (5). Similarly, the commitment placements range from no residential placements (1) to two or more placements (3). Total Criminal History scores ranges from 0 to 31, with higher scores indicating a greater criminal history.

The Social History score reflects the youth’s criminogenic needs and factors across 21 indicators (see Table 1) that include academic enrollment, antisocial/ criminal lifestyle, dysfunctional family and peer groups, substance use, history of abuse and/or

neglect, and mental health problems (Baglivio, 2009). Total scores range from 0 to 18, with higher scores indicating more criminogenic factors in the youth's social environment.

Table 1

## PACT Domain Indicators

<i>Criminal History Indicators</i>	<i>Social History Indicators</i>
Age at First Offense	Gender
Adjudicated Misdemeanors	School Enrollment
Adjudicated Felonies	Antisocial Peer Groups
Weapon Offenses	Current Peer Groups
Against-Person Misdemeanors	History of Out-of-Home Placements
Against-Person Felonies	History of Running Away
Sexual Misdemeanors	History of ANY Household Members Jailed
Felony Sex Offenses	History of Current Household Members Jailed
Secure Detention	Parental History of AOD/Health/ Employment Problems
Commitment Placement	Parental Authority and Control
Escape Adjudications	Juvenile Alcohol Use History
Failure to Appear	Juvenile Drug Use History
	Current Juvenile Alcohol Use
	Current Juvenile Drug Use
	History of Physical Abuse
	History of Sexual Abuse
	History of Neglect
	History of Mental Health Problems
	History of Anger/ Irritability
	History of Depression/ Anxiety
	Traumatic Event History

Using a decisional matrix aggregating these Criminal History and Social History domain scores, the PACT's automated scoring system produces an "Overall Risk to

Reoffend” level, classifying the youth as either low, moderate, moderate-high, or high risk. Table 2 below is a replication of the decisional matrix from Baglivio (2009).

Table 2

*PACT Scoring Matrix*

<i>Criminal History</i>	<i>Social History</i>		
	<i>0 to 5</i>	<i>6 to 9</i>	<i>10 to 18</i>
<i>0 to 5</i>	Low	Low	Moderate
<i>6 to 8</i>	Low	Moderate	Moderate-High
<i>9 to 11</i>	Moderate	Moderate-High	High
<i>12 to 31</i>	Moderate-High	High	High

Although the PACT is, in some respects, an objective measure, there is room for subjective interpretation, particularly due to the method of administration. The PACT is required to be administered via an open-ended but structured interview process, with individuals trained in utilizing principles of motivational interviewing (Miller & Rollnick, 2002) to elicit feedback from the youth. The questions on the interview protocol are designed to closely align to the coding of the items within each domain. Following the interview, the interviewer then uses the youth’s responses to complete the multiple-choice coding system in the PACT scoring software.

Depending on the skill and training of the interviewer, the use of the coding system can be subject to error and subjectivity. Within the Current Relationships domain, for instance, the interviewer must decide whether the youth has “some,” “strong,” or “no” prosocial community relationships.” The interview protocol neither specifically inquires as to prosocial community relationships nor does it use this wording and terminology. Instead, it requires careful questioning to elicit responses that may indicate the degree of

such relationships. In addition, the distinction between none, some, or strong prosocial relationships, can and may vary considerably between interviewers and across differing situational contexts.

To offset this possible limitation, the PACT test developers strongly caution interviewers to corroborate and validate the youth's responses with collateral information before coding the responses into the system. An additional strength of the PACT is the requirement of the scoring system to be integrated with the local justice department's case management and information system. This allows for the automatic pre-population of some of the required information, such as the record of referrals, increasing both accuracy and efficiency.

**Predictive Validity of the PACT.** Much of the literature validating the PACT's use of assessing juvenile recidivism has been limited to the population in which it was developed. In the first validation study, using 8,132 PACT assessments from a predominantly male (69.8%) and non-minority (61.1%) sample, the PACT performed as expected (Baglivio, 2009). The Overall Risk to Reoffend levels and the Criminal and Social History scores were statistically significant predictors of recidivism, with higher scores indicating greater chances of reoffending. Notably, however, the area under the curve (AUC) effect size (.593) of the PACT's risk levels was below the range reported of other empirically validated adult (Douglas, Yeomans, & Boer, 2005; Kroner & Mills, 2001; Tully, Chou, & Browne, 2013) and juvenile risk assessment instruments (Schmidt, Campbell, & Houlding, 2011; Hilterman, Nicholls, & van Nieuwenhuizen, 2013). The PACT was described as yielding effect sizes which were comparable and "within the

parameters of the AUC effect sizes for very popular assessments” (Baglivio, 2009, p. 604).

A later comprehensive three-part validation study of the PACT, using over 80,000 PACT assessments from the same Florida youth justice population between 2007 and 2009, yielded marginally better findings (Winokur-Early, Hand, & Blankenship, 2012). The PACT was found to be significantly related to recidivism, with youths classified as higher risk being more likely to recidivate than those classified as lower risk, a trend consistent across gender, racial groups, and age categories.

The AUC effect sizes obtained indicated the instrument performed somewhat better than in Baglivio’s earlier study. Whether stratified by gender (male, female), minority status (minority, non-minority), or definition of recidivism (re-arrest, re-adjudication), AUC effect sizes ranged from a low of .594 to .647 (i.e. small to moderate range) for the Overall Risk to Reoffend level and the Criminal and Social History scores. Although still underperforming in comparison to other youth risk assessment measures, these AUC effect sizes suggest the PACT may be a useful instrument in predicting risk for recidivism.

Other notable findings of utility of the PACT suggest there are gender, racial, and social differences in the prediction of risk for offense. Existing research suggests that risk assessment instruments may perform differently across gender and racial groups in both adult and youth offender populations (Holsinger, Lowenkamp, & Latessa, 2006; Långström, 2004; Olver, Stockdale, & Wormith, 2004; Schwalbe, 2008; Schwalbe, Fraser, Day, & Cooley, 2006; Whiteacre, 2006). In their examination of the validity of the PACT across gender and racial groups, Baglivio and Jackowski (2013a) found that

across each sub-sample, stratified by racial groups (African American, Caucasian, and Hispanic) and gender, AUC effect sizes ranged from .569 to .615. Although the values for each subgroup varied, the researchers concluded there were “no substantive differences in prediction across gender or racial subgroups” (Baglivio & Jackowski, p. 33) due to the overlapping 95% confidence intervals of the AUC effect sizes.

Although there were no differences in the PACT’s predictive validity across gender and racial groups using the Overall Risk to Reoffend level, Baglivio and Jackowski (2013a) observed the domain scores and specific indicators on the PACT influenced the predictive validity of recidivism outcomes across these subgroups. While the Criminal History score was one of the most significant predictors overall, it did not predict recidivism (by conviction of a new offense) for African American, Caucasian, or Hispanic women.

Taken together, these findings suggest two summary statements. First, the PACT, much like other risk assessment instruments, may work differently (although not necessarily to a significant degree) across and within gender and racial groups. Secondly, some evidence suggests that domains and indicators of the PACT may offer incremental predictive utility in addition to, or in comparison with, relying on the Overall Risk to Reoffend level. This is also consistent with the literature on other risk assessment instruments suggesting that individual components of the instruments such as item-level static and dynamic factors may offer incremental and/or differential predictive validity of the instrument (Marczyk, Heilbrun, Lander, and DeMatteo, 2003; Marshall, Egan, English, & Jones, 2006; McGrath & Thompson, 2012). Given that the PACT output produces three scores, Overall Risk to Reoffend, Criminal History, and Social History,

the predictive value of all, not just one, of these scores in making inferences is needed. Further, the question remains as to which, if any, of the indicators within the domains also aid in the prediction of risk.

## CHAPTER II

### Current Study

Between 2009 and 2010, the Risk and Needs Assessment (RANA) was piloted and implemented in the state of Texas. The RANA was developed by the Texas Juvenile Probation Commission (2009) using data from over 3,000 juveniles from 31 counties in the state of Texas. The RANA identifies approximately 11 risk factors and seven (7) needs areas. Although the majority of juvenile justice agencies utilize the RANA, the tool developed and normed on Texas juvenile offenders, the Texas Juvenile Justice Department (2015) has also approved the use of the YLS/CMI and the PACT.

To date, much of the published research on the PACT uses the Florida juvenile justice population (Baglivio & Jackowski, 2013a, 2013b; Baglivio, Wolff, Epps, & Nelson, 2015; Baglivio, Wolff, Jackowski, & Greenwald, 2015; Hay, Widdowson, Bates, Baglivio, Jackowski, & Greenwald, 2016). Two unpublished studies (Baglivio, 2015; Martin, 2012) upheld the PACT's predictive validity for recidivism in various samples of Texas juvenile offenders, albeit without peer review. Outside of these manuscripts, other studies involving the PACT with other juvenile justice populations have evaluated specific versions of the PACT (e.g., Residential PACT) and their predictive validity for other outcomes, such as staff assault in residential settings (Rembert, Henderson, Threadcraft-Walker, & Simmons-Horton, 2017) and length of stay and therapeutic change (Walker & Bishop, 2016).

While the existing published research on the PACT gives the instrument some empirical support, the paucity of research on the PACT in other juvenile offender populations limit confidence in its psychometric performance and its generalizability.

Psychometric assessment in new samples is an urgent and pressing need, particularly since the development of youth risk assessments was predicated on the need for instruments specific to the population of interest. Despite the proliferation of juvenile risk/needs assessments, the external validity of these instruments is limited by research failing to account for jurisdictional differences (Hannah-Moffat & Maurutto, 2003).

The current study contributes to the risk assessment literature and knowledge base in four ways. The overarching goal of this project is to test the predictive validity of the PACT. In that sense, this study is an attempt to replicate the findings of Baglivio and colleagues and the comprehensive validation study of the PACT (Winokur-Early, Hand, & Blankenship, 2012). Second, this study extends the validation of the PACT for use in other jurisdictions outside the original population assessed. Third, prior PACT validation studies utilized a population in which staff implementing the PACT were trained by the test developers, likely under rigorously controlled conditions. This project, on the other hand, is a retrospective analysis of the PACT as it is in use in the field under real world conditions, thereby allowing examination of the instrument in an ecologically valid context.

Finally, proceeding from the assumption that the PACT works as is intended in predicting recidivism, the PACT meets the first goal of any risk assessment instrument. A secondary aim of risk assessment instruments is to use the offender's identified areas of greatest criminogenic risks and needs to appropriately match intervention and treatment services. However, there have been limited studies that investigate whether the PACT, or any other risk assessment instruments, offer predictive validity on legal outcomes other than recidivism (Childs, Ryals, Frick, Lawing, Phillippi, & Deprato,

2013). As the PACT identifies these risks, needs, and protective factors, this study addresses this gap in the literature by evaluating whether the PACT can be used to predict legal outcomes other than recidivism.

### **Research Questions**

Using the previous findings of the PACT as a foundation for direction, the current study's research questions are as follows:

1. Does the PACT's Overall Risk to Reoffend level significantly predict recidivism with higher scores indicating greater likelihood of recidivism, in a sample of Texas youth offenders?
2. Do the Criminal History and/or Social History domain scores also predict recidivism?
3. Does the PACT risk scores (Overall Risk to Reoffend, Criminal History, and Social History) display gender and/or race-specificity in predicting recidivism?

In addition, two more exploratory research questions are offered:

4. Are there specific domains and/or indicators on the PACT that predict the likelihood of recidivism to a significant or equivalent degree as that of the Overall Risk to Reoffend level?
5. Can the PACT be used to predict specific probation trajectories and/or outcomes?

## CHAPTER III

### Empirical Hypotheses

1. *Hypothesis 1:* The PACT Overall Risk to Reoffend will predict recidivism.
2. *Hypothesis 2:* Higher scores on the Criminal and Social History domain scores will be associated with a greater likelihood of recidivism.
  - a. Criminal and Social History sub-scores will demonstrate small to moderate AUC values in predicting recidivism.
  - b. The Overall Risk to Reoffend and Criminal and Social History scores will demonstrate small to moderate predictive value across all racial groups.
3. *Hypothesis 3:* The PACT will demonstrate gender and race specificity such that the risk scores (Overall Risk to Reoffend and Criminal and Social History) will perform differently in predicting recidivism between genders and racial groups, such that, these scores will exhibit poor predictive validity for recidivism for minority females.
4. *Hypothesis 4:* Higher scores on the Overall Risk to Reoffend, Criminal and Social History scores will be associated with increased likelihood of continued probation involvement and poorer treatment outcomes at 12-month follow-up.

## CHAPTER IV

### Methods

#### Sample

Data was collected from the Montgomery County Juvenile Probation Department (MCJPD). As of the 2010 United States Census, Montgomery County is the 11<sup>th</sup> largest county in Texas (U.S. Census Bureau, 2012). According to the most recent U.S. Census Bureau (2016) estimates, Montgomery County is a predominantly Caucasian population (68%), with individuals of Hispanic and/or Latino ethnicity (23%) comprising much of the minority population, with African Americans representing an approximate 5%. As of 2015, youth under age 18 represent approximately 26% of the population.

For the 2016 fiscal year, the Texas Juvenile Justice Department (TJJD, 2017) received approximately new 55,200 referrals across the state of Texas. Of those youths referred in 2016, Montgomery County had the 12<sup>th</sup> largest juvenile justice population ( $n = 561,515$ ), and received 947 total new referrals (TJJD). While not the largest nor the most representative sample of the Texas population, MCJPD provided an adequate sampling of youths from which comparisons to the Texas population of juvenile offenders can be made.

MCJPD implemented the use of the PACT in 2009. The PACT Pre-Screen is administered to all juveniles upon formal or informal referral to MCPD. Pending a formal referral or classification with the PACT Pre-Screen as moderate risk to reoffend or higher, a PACT Full assessment is administered. Consistent with the directives of the test developers, juveniles are periodically reassessed with a PACT Full assessment every 60 to 90 days to determine any changes in risk and needs.

Retrospective data from all juveniles referred to MCJPD within a three-year period, January 1, 2011 to December 31, 2013, were obtained from Noble Software Group LLC, the company which maintains the PACT database for MCJPD. Only the initial PACT Full Assessment was utilized as part of this study. Data for juveniles with only PACT Pre-Screens were not collected. Using the PACT Full assessments was believed to be more likely to capture a normative population of juvenile offenders ranging across risk levels.

### **Study Variables**

**Independent Variables.** The primary independent variable was the Overall Risk to Reoffend level which is a summary risk rating produced from a matrix of the two domains- Criminal History and Social History. While the original version of the PACT produced an Overall Risk to Reoffend level with four (4) risks levels, the version of the PACT used at MCJPD produces three (3) risk levels- Low, Moderate, and High. The Criminal History (0-31) and Social History (0-18) domain scores were also included as additional independent variables of interest.

**Dependent Variables.** To operationally define the primary dependent variable of interest, the Texas Legislative Budget Board (2015) defines recidivism as “a return to criminal or delinquent activity after previous criminal or delinquent involvement” (p. 1), which can include re-arrest or re-incarceration. For the current study, and consistent with other studies validating risk measures, recidivism was defined as any subsequent *new* referral or re-arrest within 12 months following the initial PACT Full Assessment. Offenses that occurred prior to the initial PACT date but were not brought forward by the probation department until after the initial PACT were not categorized as a new offense.

As the PACT is intended to predict *criminal conduct*, status offenses (e.g. truancy) or probation failure (e.g. violation of probation offenses) was not included as indicator of re-offense as they are generally considered to be noncriminal acts.

Regarding the length of time for tracking the youths, there is evidence to suggest most offenders recidivate within a 12-month period (Durose, Cooper, & Snyder, 2014; Langman & Levin, 2002). For this reason, much of the studies examining assessing recidivism rates use this timeframe. Further, this timeframe is often used in youth risk assessment validation studies (Schwalbe, 2007), including those of the PACT.

Additional variables assessed specific probation and treatment outcomes. Probation outcomes was defined as the youth's probation status (not probation involved, continued probation involvement) at of the end of the 12-month period. As the goal of juvenile probation is intended to be primarily rehabilitative, continued probation involvement may be considered an indicator of rehabilitation success. Although not proposed as a proxy for recidivism, continued probation involvement is an outcome which may provide additional data for risk management.

Treatment outcomes gathered included the type (e.g. substance abuse, anger management, etc.), quantity (number of referrals), and completion status (complete, failure to complete) of any referrals to intervention services and programs at 12months. Data for both outcome variables were collected from the Juvenile Case Management System (JCMS) which is the internet-based case management system used by MCJPD and other counties across Texas. As PACT data was obtained on youths entering MCJPD until December 31, 2013, to ensure sufficient 12-month follow-up, probation and treatment outcomes data, up to December 31, 2014, were collected.

## **Data Analytic Plan**

Preliminary analyses included bivariate correlations among all the independent variables, exploratory covariates, and outcome variables. Multiple logistic regression analyses were also conducted for the analyses where the outcome variable was dichotomously coded (e.g., recidivism); however, negative binomial regressions were most appropriate where the outcome variable (e.g., quantity of referrals) was continuous. The regression analyses were used to evaluate which of the risk scores predicted a) recidivism and b) probation/ treatment outcomes. To assess for any racial and/or gender differences, the regression analyses were conducted on the whole sample as well as sub-samples by race and gender.

The main analytic procedure to evaluate the PACT's predictive validity incorporated the use of Receiver Operating Characteristic (ROC) analysis (Mossman, 1994). Prior validation studies of the PACT have also used ROC analyses to provide area under the curve (AUC) effect sizes as a measure of its predictive validity. Consequently, the use of these analyses also provided continuity in evaluating the instrument as well as allowing for comparison with prior studies.

To test the primary hypothesis, a predictive relation between the Overall Risk to Reoffend level and the recidivism variable, ROC analyses were conducted for the whole sample and sub-samples by race and gender. Given the hypotheses of the PACT performing differentially between racial groups and gender, ROC analyses were also particularly useful in parsing out the degree to which the PACT is useful in predicting recidivism across these demographics.

## CHAPTER V

### Results

#### Descriptive Statistics

The initial sample, provided by Noble Software Group, LLC, of all juveniles who received an initial PACT Full assessment between January 1, 2011 and December 31, 2013 included a total of 679 juveniles. After cross-validating PACT data with information in MCJPD's case management database (JCMS), data from approximately 130 juveniles were excluded from the final analyses due to missing data. For instance, approximately 67 juveniles had records that were expunged and thus were unable to be accessed to obtain information regarding any of the outcome variables. Similarly, for some juveniles over age 17, information regarding their recidivism status and/or probation involvement was unable to be determined. Juveniles aged 17 and older were only included in the final dataset if adequate 12-month follow-up data was available from either JCMS or in the data provided by Noble Software Group, LLC.

Table 3 provides an aggregate of the demographic characteristics. The final sample ( $N = 549$ ) ranged in age from 10 to 18 years ( $M_{age} = 15.04$ ,  $SD = 1.45$ ) and was overwhelmingly male (83.4%). The sample was racially diverse with 54.8% of juveniles identified as White Non-Hispanic, 30.2% Hispanic, 13.8% African American, and 1.1% including a mix of other minority ethnicities. Of note, this breakdown generally reflects population estimates of ethnic representation for Montgomery County by the most recent census data, described earlier.

Table 3

*Sample Demographics*

Demographic Variable	Frequency ( <i>n</i> )	Percent (%)
<b>Gender</b>		
Male	458	83.4
Female	91	16.6
<b>Race</b>		
White Non-Hispanic	301	54.8
African American	76	13.8
Hispanic	166	30.2
Other	6	1.1
<b>Age at PACT</b>		
Under 13	36	6.6
13 to 14	120	21.9
15	150	27.3
16 and over	243	44.3

A closer inspection of the indicator responses for the Social and Criminal History domains (see Tables 4 and 5) revealed additional descriptive characteristics of the sample. Close to 80% of the sample were enrolled full-time in school and the majority had a mix of pro-social and anti-social peers. Less than 10% were identified as having past or present gang associations. Although most youth had past alcohol and drug use, a greater proportion were experiencing significant functional impairments from their drug use than alcohol use. Regarding psychiatric history, most had never had serious thoughts of suicide and had never received a mental health diagnosis.

Trauma and other adverse childhood experiences were prevalent in the sample. Forty percent reported a history of a traumatic event, 22% reported being physically abused, 11% sexually abused, and 9% experiencing neglect. Just under half of the sample (46.6%) reported having a family member currently living in the household with a

history of being incarcerated. Approximately 60% indicated having family members, who had ever lived in the home, with a history of jail or imprisonment. Unsurprisingly, 44% had a parent with significant physical/ mental health, substance use, or employment difficulties. Although youth were less likely to have out-of-home placements, court-ordered or otherwise, close to one third had ran away from home at least once.

Criminal history characteristics were less variable (see Table 5). Of concern, 18% of youth reported committing their first offense under age 12 and 40% between ages 13 to 14. Interestingly, more youth had a history of prior felony referrals (69%) in comparison to misdemeanor referrals (26%). Against-person felonies (e.g. aggravated assault) were more common in comparison to either against-person misdemeanors (e.g. domestic assault), weapons, or sexual offenses. More youth had a history of ever being detained in comparison to being judicially-committed to a facility.

Table 4

*Percentages of juveniles within each Social History domain indicator (N = 549)*

Domain/ Indicator	Frequency (n)	Percent (%)
School Enrollment		
Graduated/ GED	9	1.6
Full-time	434	79.1
Part-time	4	0.7
Suspended	1	0.2
Dropped Out/ Expelled	101	18.4
Antisocial Peer Groups (Historical)		
History of no friends	37	6.7
Pro-social friends only	66	12.0
Mix of anti-social and pro-social friends	340	61.9
Anti-social friends only	60	10.9
Gang Member/ Associate	46	8.4
Current Peer Groups		
No current friends	57	10.4
Pro-social friends only	92	16.8

(continued)

Domain/ Indicator	Frequency ( <i>n</i> )	Percent (%)
Mix of anti-social and pro-social friends	303	55.2
Anti-social friends only	55	10.0
Gang Member/ Associate	42	7.7
History of Out-of-Home Placements		
No Out-of-Home Placement	461	84.0
One Placement	66	12.0
Two Placements	7	1.3
Three Placements	15	2.7
History of Running Away		
No Instances	349	63.6
One Instance	76	13.8
Two or Three Instances	80	14.6
Four or Five Instances	14	2.6
Five or more instances	30	5.5
History of ANY Household Members Jailed		
None	220	40.1
One or more	329	59.9
History of Current Household Members Jailed		
None	293	53.4
One or more	256	46.6
Parental History of AOD/Health/ Employment Problems		
No parent problem history	309	56.3
One or more parent problem history	240	43.7
Parental Authority and Control		
Usually obeys rules	146	26.6
Sometimes obeys rules	274	49.9
Disobeys rules/ is openly hostile	129	23.5
Juvenile Alcohol Use History		
No past use	228	41.5
Past use	230	41.9
Past use causes problems	91	16.6
Juvenile Drug Use History		
No past use	154	28.1
Past use	134	24.4
Past use causes problems	261	47.5
Current Juvenile Alcohol Use		
No current use	429	78.1
Current use	71	12.9
Current use causes problems	49	8.9
Current Juvenile Drug Use		
No current use	245	44.6

(continued)

Domain/ Indicator	Frequency ( <i>n</i> )	Percent (%)
Current use	58	10.6
Current use causes problems	246	44.8
History of Physical Abuse		
No history of physical abuse	427	77.8
History of physical abuse	122	22.2
History of Sexual Abuse		
No history of sexual abuse	487	88.7
History of sexual abuse	62	11.3
History of Neglect		
No history of neglect	502	91.4
History of neglect	47	8.6
History of Mental Health Problems		
No prior mental health diagnosis	404	73.6
Prior mental health diagnosis	145	26.4
History of Suicidal Ideation		
No serious thoughts	418	76.1
Had serious thoughts	77	14.0
Made a plan	21	3.8
Attempted suicide	33	6.0
History of Depression		
No history of depression	250	45.5
Occasional feelings of depression	202	36.8
Consistent feelings of depression	83	15.1
Impairment from depression	14	2.6
History of Anger/ Irritability		
No history of anger	85	15.5
Occasional anger	240	43.7
Consistent anger	88	16.0
Aggressive reactions to anger	136	24.8
Traumatic Event History		
No trauma history	328	59.7
History of traumatic event	197	35.9
Experiences flashbacks	24	4.4

Table 5

*Percentages of youth within each Criminal History domain indicator (N = 549)*

Domain/ Indicator	Frequency (n)	Percent (%)
Age at First Offense		
No Prior Offense	2	0.4
12 and Under	101	18.4
13 to 14	220	40.1
15	134	24.4
16 and over	92	16.8
Adjudicated Misdemeanors		
None or One	405	73.8
Two	106	19.3
Three or Four	34	6.2
Five or more	4	0.7
Adjudicated Felonies		
None	169	30.8
One or Two	325	59.2
Three or more	55	55
Weapon Offenses		
None	521	30.8
One or More	28	59.2
Against-Person Misdemeanors		
None	446	81.2
One or Two	83	15.1
Three or more	20	3.6
Against-Person Felonies		
None	371	67.6
One or Two	176	32.1
Three or more	2	0.4
Sexual Misconduct Misdemeanors		
None	545	99.3
One	4	0.7
Felony Sex Offenses		
None	458	83.4
One	88	16.0
Two or more	3	0.5
Secure Detention		
None	234	42.6
One	146	26.6
Two	71	12.9
Three or more	98	17.9
Commitment Placement		
None	502	91.4
One	32	5.8
Two or more	15	2.7
Escape Adjudications	0	100
Failure to Appear		
None	517	94.2
One	21	3.8
Two or more	11	2.0

## Risk Classifications

Approximately 35% of youth received an Overall Risk to Reoffend classification in the High range, 38.4% in the Moderate range, and 26.4% were Low risk. The mean Criminal History domain score was 6.99 ( $SD = 3.27$ ) and the mean Social History score was 6.82 ( $SD = 2.90$ ). Similar proportions of males and females were classified in each risk category (see Table 6). A higher percentage of youth identified as White Non-Hispanic were assessed as High risk (39.5%) compared to African American (30.3%) or Hispanic (30.7%) youth. Overall, there was a tendency for African American and Hispanic youth to be classified as Moderate risk to reoffend. A greater proportion of youth aged 14 and younger were classified as Moderate risk to reoffend in comparison to youth aged 15 and older.

Table 6

### *Descriptive Statistics for Overall Risk to Reoffend Classification*

Demographic Variable	Overall Risk to Reoffend		
	Low <i>n</i> (%)	Moderate <i>n</i> (%)	High <i>n</i> (%)
<b>Total Sample</b> ( $N = 549$ )	145 (26.45%)	211 (38.4%)	193 (35.2%)
<b>Gender</b>			
Male	117 (25.5%)	180 (39.3%)	161 (35.2%)
Female	28 (30.8%)	31 (34.1%)	32 (35.2%)
<b>Ethnicity</b>			
White Non-Hispanic	76 (25.2%)	106 (35.2%)	119 (39.5%)
African American	18 (23.7%)	35 (46.1%)	23 (30.3%)
Hispanic	47 (28.3%)	68 (41.0%)	51 (30.7%)
Other	4 (66.7%)	2 (33.3%)	0 (0.0%)
<b>Age at PACT</b>			
Under 13	9 (25.0%)	15 (41.7%)	12 (33.3%)
13 to 14	29 (24.2%)	58 (48.3%)	33 (27.5%)
15	40 (26.7%)	54 (36.0%)	56 (37.3%)
16	47 (26.4%)	64 (36.0%)	67 (37.6%)
Over 16	20 (30.8%)	20 (30.8%)	25 (38.5%)

## Recidivism Analyses

The primary dependent variable of interest, recidivism, was coded as 1 (new offense) or 0 (no new offense) based on information obtained from JCMS. For the total sample, 14% ( $n = 77$ ) of youth recidivated during the 12-month tracking period post-PACT administration. Due to the overall low count of youth who recidivated, several planned comparisons could not be made. Of the 77 youth who recidivated, 10 were female and were categorized as either Moderate or High Risk. As such, analyses to compare the risk levels within female recidivists were not conducted. The small sample of female recidivists also precluded comparisons between genders as well as race by gender (female) comparisons.

Similarly, there were proportionally fewer African American and Other youth, overall, who recidivated in comparison to White Non-Hispanic and Hispanic youth. Accordingly, racial differences were analyzed between White Non-Hispanic versus Minority (i.e. Hispanic and African American) youth. Chi-square analyses indicated that neither gender ( $p = .36$ ) nor minority status ( $p = .08$ ) independently differentiated between youth who did or did not recidivate.

In comparing recidivism by risk level for the total sample, almost 50% of youth who recidivated were categorized as High Risk (see Table 7). In contrast, 10% of youth categorized as Low risk recidivated in the 12-month tracking period. Chi-square analyses confirmed the relation between the Overall Risk to Reoffend level and recidivism,  $\chi^2 = 13.92$ ,  $df = 2$ ,  $p < .001$ .

Table 7

*Descriptive Statistics for Recidivism by Overall Risk to Reoffend, Race, and Gender*

Demographic Variable	Overall Risk to Reoffend		
	Low	Moderate	High
<b>Total Sample</b> ( <i>n</i> = 77)	8 (10.4%)	31 (40.3%)	38 (49.4%)
<b>Gender</b>			
Male	8 (11.9%)	28 (41.8%)	31 (46.3%)
Female	0 (0%)	3 (30.0%)	7 (70.0%)
<b>Race</b>			
White Non-Hispanic	3 (8.6%)	12 (34.3%)	20 (57.1%)
Minority	5 (11.9%)	19 (45.2%)	18 (42.9%)
African American	2 (15.4%)	6 (46.2%)	5 (38.5%)
Hispanic	2 (7.1%)	13 (46.4%)	13 (46.4%)
Other	1 (100%)	0 (0%)	0 (0%)

Post hoc analyses indicated the expected cell counts for the Low risk youth ( $z = -3.4$ ) was significantly less than the observed count, whereas for High Risk youth ( $z = 2.8$ ), it was significantly greater. There was no significant difference between the expected and observed counts for Moderate Risk youth ( $z = 0.4$ ). This pattern was also observed in comparisons within the White Non-Hispanic ( $\chi^2 = 7.48$ ,  $df = 2$ ,  $p = .024$ ) and Minority ( $\chi^2 = 7.58$ ,  $df = 2$ ,  $p = .023$ ) groups such that differences in the observed and expected cell counts were significantly different for Low and High Risk youth, only.

For each sub-sample analyzed, a similar pattern emerged to that of the total sample. The Overall Risk to Reoffend level was significantly related to recidivism for male youth,  $\chi^2 = 8.57$ ,  $df = 2$ ,  $p = .02$ , with Low Risk male youth ( $z = -2.8$ ) being less likely to recidivate than High Risk male youth ( $z = 2.1$ ). Again, there was no significant

difference between the expected and observed counts for Moderate Risk male youth ( $z=0.5$ ). Risk level comparisons for White Non-Hispanic male youth ( $p=.07$ ) and Minority male youth ( $p=.15$ ) were non-significant.

Bivariate correlations were used to examine the relationship with recidivism and the Criminal History and Social History domain scores as well as the indicators for each domain. As shown in Tables 8 and 9, small positive correlations were obtained for both the Criminal History and Social History domain scores, indicating that as these scores increased, the risk of recidivism also increased.

Age-related indicators negatively correlated with recidivism, such that, youth who were younger at PACT administration were more likely to recidivate, as were youth whose first offense was committed at a younger age. Interestingly, the more sex offenses youth had, the less likely they were to recidivate. This was likely due to youth with sex offenses being under more intensive supervision. Youth who were rated as having greater difficulty complying with rules in home were also at an increased likelihood of recidivating.

Table 8

*Correlations between PACT Domain and Indicators with Recidivism*

Domain/ Indicator	Recidivism
<b>Criminal History</b>	<b>.143**</b>
Age at First Offense	-.186**
Adjudicated Misdemeanors	-.009
Adjudicated Felonies	.095*
Weapon Offenses	-.022
Against-Person Misdemeanors	.040
Against-Person Felonies	-.014
Sexual Misconduct Misdemeanors	-.035
Felony Sex Offenses	-.096*
Secure Detention	.076
Commitment Placement	.004
Escape Adjudications <sup>a</sup>	---
Failure to Appear	.015
<b>Social History</b>	<b>.127**</b>
School Enrollment	-.014
Antisocial Peer Groups	.054
Current Peer Groups	.077
History of Out-of-Home Placements	-.031
History of Running Away	.051
History of ANY Household Members Jailed	-.012
History of Current Household Members Jailed	-.020
Parental History of AOD/Health/ Employment Problems	-.028
Parental Authority and Control	.136**
Juvenile Alcohol Use History	.057
Juvenile Drug Use History	.050
Current Juvenile Alcohol Use	-.010
Current Juvenile Drug Use	-.029
History of Physical Abuse	-.060
History of Sexual Abuse	.052
History of Neglect	.064
History of Mental Health Problems	.055
History of Suicidal Ideation	-.010
History of Anger/ Irritability	.074
History of Depression/ Anxiety	.036
Traumatic Event History	-.012

$N = 549$

\* $p < .05$ . \*\* $p < .01$ .

<sup>a</sup>No youth escaped from secure facilities.

**Area Under the Curve.** The predictive validity of the PACT was estimated using the receiver operating characteristic curve analysis (Mossman, 1994; Rice & Harris, 1994). For the total sample, the Overall Risk to Reoffend level yielded an AUC value of .621 (95% CI = .558 to .684) and was statistically significant,  $p < .001$  (see Table 9). This suggests that there is a 62% probability that a youth who recidivated, selected at random, would have a higher Overall Risk to Reoffend level than a randomly selected youth who did not recidivate. Following Rice and Harris's AUC qualitative descriptions, this AUC value is in the small to moderate range. Notably, this value is larger than the AUC obtained in Baglivio's (2009) validation study. The AUCs observed for the male-only and minority/ non-minority samples were also in the small to moderate range.

Table 9

*Area under the Curve (AUC) Analyses Predicting Recidivism using Overall Risk to Reoffend*

	<i>AUC</i>	<i>S.E.</i>	<i>p</i>	<i>95% Confidence Interval</i>
Total Sample	.621	.032	.001**	.558 - .684
Male-only	.600	.035	.009**	.531 - .669
White Non-Hispanic-only	.632	.046	.011*	.541 - .722
Minority <sup>a</sup>	.624	.045	.011*	.536 - .712

\* $p < .05$ . \*\* $p < .01$ .  $p < .001$ \*\*\*

<sup>a</sup>Other racial group not included.

As stated previously, the Overall Risk to Reoffend level is the result of aggregating the Criminal History and Social History domain scores. Given the observed positive correlations between these scores and recidivism (see Table 7), the predictive

power of these variables was also analyzed. As shown in Table 10, the AUCs obtained for the total sample for Criminal History and Social History were in the small to moderate range, except for the female-only sample. Females were included in these analyses as all female youth had Criminal and Social History scores. Both Criminal History and Social History offered predictive value for minority and non-minority youth.

Table 10

*Area under the Curve (AUC) Analyses Predicting Recidivism using Domain Scores*

Domain	<i>AUC</i>	<i>S.E.</i>	<i>p</i>	<i>95% Confidence Interval</i>
<i>Criminal History</i>				
Total Sample	.612	.032	.002**	.549 - .675
Male-only	.582	.035	.033*	.512 - .651
Female-only	.782	.062	.004**	.661 - .903
White Non-Hispanic-only	.632	.043	.011*	.547 - .716
Minority	.596	.047	.050*	.504 - .688
<i>Social History</i>				
Total Sample	.603	.032	.004**	.539 - .667
Male-only	.588	.036	.022*	.518 - .658
Female-only	.697	.067	.043*	.565 - .829
White Non-Hispanic-only	.612	.046	.031*	.521 - .703
Minority	.598	.046	.045*	.516 - .694

\* $p < .05$ . \*\* $p < .01$ .

$N = 549$

**Logistic Regressions.** Logistic regressions were employed to assess whether the Overall Risk to Reoffend level significantly predicted recidivism for the total sample and sub-samples, with the Low risk group as the reference category. For the total sample, a test of the full model against a constant only model was statistically significant, indicating that the risk levels reliably distinguished between youth who did and did not recidivate ( $\chi^2 = 15.658$ ,  $df = 2$ ,  $p < .001$ ). Results indicated that an increase in risk level also increased the likelihood of recidivism, such that, youth assessed at Moderate and High risk were between two to four times more likely to recidivate than Low risk youth (see Table 11).

Table 11

*Logistic Regression predicting Recidivism using Overall Risk to Offend for the Total Sample*

Predictor	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>df</i>	<i>Sig.</i>	<i>Exp(B)</i>
High Risk	1.435	0.406	12.470	1	.000**	4.198
Moderate Risk	1.082	0.412	6.877	1	.009**	2.949
Constant (Low Risk)	-2.841	0.364	60.988	1	.000	0.058

\* $p < .05$ . \*\* $p < .01$ .

Across the sub-samples, as shown in the Table 12, the Overall Risk to Reoffend level was a differential predictor of recidivism. For male youth, there was an increased likelihood of recidivating as the risk level increased ( $\chi^2 = 9.54$ ,  $df = 2$ ,  $p = .008$ ), with males assessed at Moderate and High risk being two to three times more likely to recidivate than low risk youth. For samples stratified by minority status, the model was

significant for both the White Non-Hispanic,  $\chi^2 = 8.473$ ,  $df = 2$ ,  $p = .014$ , and Minority sub-samples,  $\chi^2 = 8.33$ ,  $df = 2$ ,  $p = .016$ .

White Non-Hispanic youth who were assessed at High risk were almost five times more likely than same-race youth assessed as Low risk to recidivate. Similarly, Minority youth assessed as Moderate or High risk were between two to four times more likely to recidivate than Low risk Minority youth. A significant regression equation was observed for White Non-Hispanic male youth,  $\chi^2 = 6.02$ ,  $df = 2$ ,  $p = .049$ , with predicted odds in the expected direction for White Non-Hispanic male youth categorized as High Risk,  $\beta = 1.41$ ,  $S.E. = 0.65$ ,  $\text{Exp}(B) = 4.09$ ,  $p = .03$ ). No significant difference between risk levels was observed for Minority male youth,  $p = .13$ .

Table 12

*Logistic Regression predicting Recidivism using Overall Risk to Offend for Sub-Samples*

Predictor	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>df</i>	<i>Sig.</i>	<i>Exp(B)</i>
<i>Male-only Sample</i>						
High Risk	1.178	0.417	7.974	1	.005**	3.249
Moderate Risk	0.920	0.420	4.799	1	.028*	2.510
Constant (Low Risk)	-2.612	0.366	50.845	1	.000	0.073
<i>White Non-Hispanic-only Sample</i>						
High Risk	1.592	0.638	6.229	1	.013**	4.916
Moderate Risk	1.133	0.664	2.913	1	.088	3.106
Constant (Low Risk)	-3.192	0.589	29.357	1	.000	0.041
<i>Minority-only Sample</i>						
High Risk	1.414	0.538	6.922	1	.009**	4.114
Moderate Risk	1.040	0.529	3.861	1	.049*	2.828
Constant (Low Risk)	2.549	0.464	30.143	1	.000	0.078

\* $p < .05$ . \*\* $p < .01$ .  $p < .001$ \*\*\*

Table 13 shows the results of a logistic regression with a model including only the Criminal History and Social History scores for the total sample. The overall model was significant ( $\chi^2 = 15.70$ ,  $df = 2$ ,  $p < .001$ ), with both Criminal History and Social History significantly predicting recidivism for the total sample. A one unit increase in the Criminal History score increased the likelihood of recidivism by a factor of 1.11, while a similar increase for Social History score resulted in 1.09 times increase.

Table 13

*Logistic Regression predicting Recidivism using Domain Scores*

Predictor	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>df</i>	<i>Sig.</i>	<i>Exp(B)</i>
Criminal History	0.108	0.041	7.068	1	.008**	1.11
Social History	0.086	0.038	5.088	1	.024**	1.090
Constant	-3.233	0.395	66.973	1	.000	0.039

\* $p < .05$ . \*\* $p < .01$ .

In comparing these domain scores within the sub-samples (see Table 14), the overall model was significant for male-only sample ( $\chi^2 = 9.24$ ,  $df = 2$ ,  $p = .01$ ), female-only ( $\chi^2 = 10.24$ ,  $df = 2$ ,  $p = .006$ ), White Non-Hispanic ( $\chi^2 = 8.42$ ,  $df = 2$ ,  $p = .015$ ), and Minority-only samples ( $\chi^2 = 8.29$ ,  $df = 2$ ,  $p = .016$ ); however, Criminal History was only a significant predictor of recidivism for female and White Non-Hispanic youth.

Table 14

*Logistic Regression predicting Recidivism using Domain Scores for Split Samples*

<b>Predictor</b>	<b>B</b>	<b>S.E.</b>	<b>Wald</b>	<b>df</b>	<b>Sig.</b>	<b>Exp(B)</b>
<i>Male-only Sample</i>						
Criminal History	0.080	0.044	3.256	1	.071	1.083
Social History	0.080	0.041	3.712	1	.054	1.083
Constant	-2.925	0.417	49.182	1	.000	0.54
<i>Female-only Sample</i>						
Criminal History	0.292	0.117	6200	1	.013*	1.340
Social History	0.174	0.112	2.412	1	.120	1.190
Constant	-5.644	1.417	15.856	1	.000	.004
<i>White Non-Hispanic-only Sample</i>						
Criminal History	0.119	0.056	4.471	1	.034*	1.127
Social History	0.086	0.054	2.544	1	.111	1.090
Constant	-3.561	0.590	36.400	1	.000	0.028
<i>Minority-only Sample</i>						
Criminal History	0.104	0.061	2.876	1	.090	1.109
Social History	0.096	0.057	2.876	1	.090	1.109
Constant	-3.013	0.542	30.910	1	.000	.049

### **Probation Outcomes**

A second dependent variable of interest was the youth's probation outcome, operationally defined as the youth's involvement with the probation department after the 12-month tracking period, coded as 0 (not probation involved) or 1 (probation-involved). 38% had continued probation involvement with MCJDP at the end of the tracking period. Chi-square analyses, comparing probation outcome by risk level for the total sample, indicated a significant relationship,  $\chi^2 = 12.99$ ,  $df = 2$ ,  $p = .002$ . Again, like the relationship observed with recidivism, Low Risk youth ( $z = -2.7$ ) were less likely to be probation-involved than were High Risk ( $z = 3.3$ ) youth. Predicting probation outcome using Criminal and Social History scores was significant,  $\chi^2 = 18.73$ ,  $df = 2$ ,  $p < .001$ , with Criminal History being the only significant predictor,  $\beta=0.11$ ,  $S.E.= 0.03$ ,  $Exp(B)=1.12$ ,  $p < .001$ .

**Intervention/ Treatment Outcomes.** Additional exploratory analyses included evaluating the relationship between the risk levels, domain scores, referrals to intervention program, and successful intervention completion. For these analyses, data from 33 youth were removed due to insufficient information regarding their intervention history, resulting in a total sample size of 516 youth. Youth could be referred to thirty-four (34) different intervention programs which ranged in focus and intensity to address issues with mental health, substance use, family coping, and sexual offending. For instance, youth with substance use could be referred to weekly substance abuse groups, intensive substance abuse programming, drug court, and/or intensive outpatient programs.

Intervention referrals were categorized in two ways, Different Intervention Referrals and Total Intervention Referrals received. The Different Intervention Referrals variable is an indicator of how many referrals to different types (i.e. 0-34) of intervention programs a youth received. The latter variable captures youth who may have received multiple referrals to the same intervention program. For the total sample, Different Intervention Referrals ranged from 0 to 9 ( $M = 1.78$ ;  $SD = 1.87$ ). and Total Intervention Referrals ranged from 0 to 14 ( $M = 2.04$ ;  $SD = 2.34$ ). Regardless of risk level, the modal amount for Different Intervention Referrals and Total Intervention Referrals was zero (0) and the median was one (1).

As would be expected, the majority of Low and Moderate Risk youth received one or fewer different types of intervention referrals, whereas, a larger proportion of High Risk youth received two or more different types of intervention referrals (see Table 15). Similarly, approximately 56% of High Risk youth received a total of two or more

intervention referrals; however, most Low Risk and Moderate Risk youth received one or fewer intervention referrals.

Table 15  
*Descriptive Statistics by Risk Level for Different and Total Intervention Referrals*

Demographic Variable	Overall Risk to Reoffend		
	Low <i>n</i> (%)	Moderate <i>n</i> (%)	High <i>n</i> (%)
<b><i>Different Intervention Referrals</i></b>	<b>137 (26.5%)</b>	<b>201 (40.0%)</b>	<b>178 (34.5%)</b>
0	58 (42.3%)	70 (34.8%)	36 (20.2%)
1	31 (22.6%)	53 (26.4%)	38 (21.3%)
2	16 (11.7%)	30 (14.9%)	32 (18.0%)
3	18 (13.1%)	16 (8.0%)	30 (16.9%)
4	8 (5.8%)	20 (10.0%)	11 (6.2%)
5	3 (2.2%)	5 (2.5%)	13 (7.3%)
6	3 (2.2%)	6 (3.0%)	6 (3.4%)
7 or more	0 (0%)	1 (0.5%)	12 (6.8%)
<b><i>Total Intervention Referrals</i></b>	<b>137 (26.5%)</b>	<b>201 (40.0%)</b>	<b>178 (34.5%)</b>
0	58 (42.3%)	70 (34.8%)	36 (20.2%)
1	30 (21.9%)	52 (25.9%)	35 (19.7%)
2	14 (10.2%)	27 (13.4%)	29 (16.3%)
3	16 (11.7%)	15 (7.5%)	29 (16.3%)
4	7 (5.1%)	13 (6.5%)	11 (6.2%)
5	4 (2.9%)	11 (5.5%)	12 (6.7%)
6	3 (2.2%)	6 (3.0%)	9 (5.1%)
7 or more	5 (3.6%)	7 (3.5%)	17 (9.6%)

Small positive correlations (see Table 16) were noted between Social History, Criminal History, and Different Intervention Referrals and Total Intervention Referrals. Recidivism was not correlated with either variable.

Table 16

*Correlation between Intervention Referrals, PACT Domain Scores, and Recidivism*

	Criminal History	Social History	Recidivism
Different Intervention Referrals	.174**	.116**	-.012
Total Intervention Referrals	.175**	.114**	-.015

The test for normality, examining standardized skewness, and the Shapiro-Wilks test indicated the data for both Different Intervention Referrals and Total Intervention Referrals were not normally distributed within each risk level. Accordingly, Kruskal-Wallis tests were conducted to determine if there were differences in Different Intervention Referrals and Total Intervention Referrals between the risk groups. Different Intervention Referrals and Total Intervention Referrals of 8 or more were removed from the analyses as they were determined to be outliers. Median Different Intervention Referrals were statistically significant between the risk groups,  $\chi^2(2) = 18.43, p < .001$ .

Post hoc tests, performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons, revealed statistically significant differences between Low Risk and High Risk youth ( $p < .001$ ) and Low Risk and Moderate Risk youth ( $p < .001$ ) for Different Intervention Referrals. The risk levels also differentiated between Total Intervention referrals,  $\chi^2(2) = 18.43, p < .001$ , with statistically significant differences observed between Low/High Risk ( $p < .001$ ) and Low/Moderate Risk ( $p = .003$ ) youth. Negative binomial regressions were conducted to investigate the relation between the Overall Risk to Reoffend level and Different Intervention Referrals and Total Intervention Referrals. Using Low Risk as the reference category, Table 17 shows

there was a significant effect between the risk levels and Different Intervention Referrals and for Total Intervention Referrals. Examining the individual predictors indicated that High Risk was consistently a significant predictor for both Different Intervention and Total Intervention Referrals. The domain scores were also significant predictors for both Different Intervention Referrals and Total Intervention Referrals.

Table 17

*Summary of the Negative Binominal Regression of Different Intervention Referrals and Total Intervention Referrals by Risk Levels*

<b>Predictor entered</b>	<b>B</b>	<b>S.E.</b>	<b>Wald</b>	<b>df</b>	<b>Sig.</b>	<b>Exp(B)</b>
<i>Different Intervention Referrals</i>						
Overall Model			20.98	2	.000***	
High Risk	0.593	0.144	16.97	1	.000***	1.810
Moderate Risk	0.146	0.145	1.015	1	.314	1.157
<i>Total Intervention Referrals</i>						
Overall Model			22.80	2	.000***	
High Risk	0.584	0.140	17.36	1	.000***	1.363
Moderate Risk	0.107	0.141	0.571	1	.450	0.844
<i>Different Intervention Referrals</i>						
Overall Model			22.78	2	.000***	
Criminal History	0.066	0.020	11.30	1	.001**	1.068
Social History	0.040	0.017	5.78	1	.016*	1.041
<i>Total Intervention Referrals</i>						
Overall Model			27.09	2	.000***	
Criminal History	0.072	0.020	13.80	1	.000***	1.075
Social History	0.040	0.16	6.16	1	.013*	1.041

The final exploratory analysis evaluated the relationships between the risk levels and domain scores and youths' successful completion of intervention programs to which they were referred. For these analyses, youth who received no intervention referrals were

excluded. Over half of this reduced sample ( $n = 352$ ) received three (3) or fewer intervention referrals (see Table 18).

Table 18

*Descriptive Statistics of Completion of Total Intervention Referrals*

Total Intervention Referrals	Not Complete $n = 171$	Complete $n = 181$	Total $n (%)$
1	25	92	117 (33.2)
2	30	40	70 (19.9)
3	32	28	60 (17.0)
4	17	14	31 (8.8)
5	22	5	27 (7.7)
6	18	0	18 (5.1)
7	10	2	12 (3.4)
8	6	0	6 (1.7)
9	4	0	4 (1.1)
10	3	0	3 (0.9)
11	1	0	1 (0.3)
12	1	0	1 (0.3)
13	1	0	1 (0.3)
14	1	0	1 (0.3)

Total Intervention Success was dichotomously coded to distinguish between youth who successfully completed all interventions to which they were referred and those who did not. The sample was approximately equally split such that 51.4% of youth were successful completers. A moderate negative correlation was observed between the Total Intervention Referrals youth received and Total Intervention Success at the end of the tracking period,  $\tau_b = -.44, p < .01$ , such that, the more referrals youth received the less likely they were to successfully complete all the referred intervention programs. Increases in Criminal History scores were associated with a decreased likelihood of successful referral completion ( $\tau_b = -.12, p < .01$ ). No relationship was observed between Social

History scores and Total Intervention Success. Chi-square analyses indicated no significant difference between the risk levels for Total Intervention Success,  $\chi^2 = 3.05$ ,  $df = 2$ ,  $p = .22$ . Criminal History, however, significantly predicted Total Intervention Success,  $\beta = -0.095$ ,  $S.E. = 0.034$ ,  $\text{Exp}(B) = 0.909$ ,  $p = .013$ , when entered into a regression equation with both domains,  $\chi^2 = 7.53$ ,  $df = 2$ ,  $p = .023$ , with Criminal History being the only significant predictor,  $\beta = 0.11$ ,  $S.E. = 0.03$ ,  $\text{Exp}(B) = 1.12$ ,  $p < .001$ .

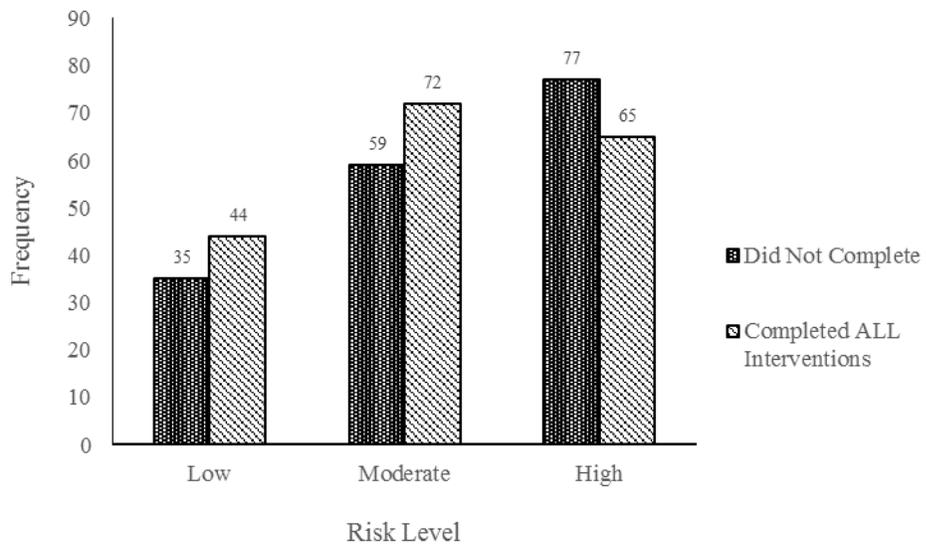


Figure 1. Intervention Completion by Risk Level.

## CHAPTER VI

### Discussion

According to the most recently available youth justice statistics, approximately 975,000 youth were processed through juvenile delinquency courts in 2014 (Hyland, 2018). Although this number may seem startlingly high, overall rates of juvenile offending have been on the decline since 1996 and current statistics represent the lowest rate since the 1970s (Hyland). In a white paper, the National Reentry Resource Center (2014) identified four core principles aimed at reducing recidivism and improving outcomes for juveniles in the justice system. Perhaps underscoring its importance, the first principle recommends the use of validated risk assessments to identify juveniles at the lowest and highest risk of reoffending to best match the intensity of interventions provided.

Jurisdictions nationwide, at the adult and youth level, are increasingly requiring the use of risk assessment tools; however, the validity of these instruments in accurately predicting re-offense is variable (Desmarais, Johnson, & Singh, 2016; Singh, Grann, & Fazel, 2011; Welsh, Schmidt, McKinnon, Chatta, & Meyers, 2008). The consensus on risk assessment instruments suggest they generally perform better than chance in predicting recidivism. When these instruments are developed and used for a specific population (e.g. juveniles) or specific offenses (e.g. sexual offending), their ability to predict re-offense is strengthened.

The *Positive Achievement Change Tool* is a relatively recently developed juvenile risk assessment instrument which the National Council on Crime and Delinquency (NCCD) endorses as an empirically-validated juvenile risk assessment. Prior studies of

the PACT have been promising; however, much of the published validation studies of the PACT have been limited to the population in which it was developed and normed. As such, the primary goal of this study was to evaluate the predictive accuracy of the PACT for the prediction of recidivism in a sample of youth offenders in a medium-sized county in Texas. It was hypothesized that the PACT risk scores (i.e. Overall Risk to Reoffend level, Criminal History, and Social History) would predict recidivism, with higher scores related to a greater likelihood of recidivism. Additional hypotheses evaluated whether these risk scores demonstrated gender and/or racial group neutrality in predicting recidivism. It was also proposed that these risk scores would also predict specific probation and treatment outcomes.

### **Recidivism Outcomes**

**Overall Risk to Reoffend.** The main metric of the PACT is the Overall Risk to Reoffend level, which is the result of a matrix of the Criminal History and Social History domain scores. An examination of the risk levels indicated that, proportionally, more youth classified as Moderate or High Risk recidivated in the 12-month tracking period. Chi-square analyses indicated that the risk levels appropriately differentiated between youth who reoffended, such that High Risk youth were the most likely to recidivate and Low Risk youth were the least likely.

Using ROC analyses, prior studies of the PACT have produced Area Under the Curve (AUC) effect sizes within the small to moderate range (Baglivio & Jackowski, 2013; Winokur-Early, Hand, & Blankenship, 2012). For the current study, the Overall Risk to Reoffend level yielded modest predictive validity (AUC = .621) for the total sample. Using Rice and Harris's classification, this area under the curve falls just short of

the moderate range (.639 to .713). This AUC value is consistent with the other published studies of the PACT which yielded effect sizes in the small to moderate ranges and is above the AUC value reported in the initial validation study (Baglivio, 2009).

Logistic regressions further confirmed the relationship between the Overall Risk to Reoffend levels and recidivism, with youth classified as High and Moderate Risk being significantly more likely than youth assessed as Low Risk to recidivate. Overall, the Low and High Risk categories were the best predictors of recidivism, whereas, Moderate Risk demonstrated a variable relationship.

Of note, the version of the PACT used in the current study produces three risk levels. Prior validation studies of the PACT utilized a version which produces four (4) risk levels which stratifies the Moderate Risk category into two levels- Moderate and Moderate High Risk. In this sample, similar proportions of youth were assessed as Moderate Risk (38%) and High Risk (35.2%), in comparison to Low Risk (26%). While approximately 10% of Low Risk youth recidivated, the rates of recidivism between the Moderate and High Risk categories were almost equivalent. One possible hypothesis explaining why the Moderate Risk category emerged as a less definitive predictor could be that the three factor risk classification may not be adequately distinguishing between youth in the Moderate Risk category.

**Domain Scores.** The Criminal History and Social History domains have been found to offer predictive value in assessing the likelihood of re-offense (Baglivio, 2009; Baglivio & Jackowski, 2013; Winokur, Hand, & Blankenship, 2012). Results from the current study support this finding. For the total sample, both domain scores were positively correlated with recidivism. This suggests that increases in the risk factors

comprising these domains are associated with an increased likelihood of reoffending. In this study, AUC statistics observed for the Criminal History (.612) and Social History (.603) domains were similar to AUCs obtained for the Overall Risk to Reoffend level (.621).

In looking at the performance of the domain scores in predicting recidivism, particularly for the sub-samples, Criminal History was most often the only significant predictor. Of the two domains, the Criminal History domain relies less on the administrator's professional judgment and reflects generally quantifiable information. Further, much of the information for the domain is prepopulated from the department's case management database. The stronger performance of the Criminal History domain may be attributable to the inherent objectivity of the items. Alternatively, a more parsimonious explanation could be past criminal behavior best predicts future criminal behavior.

**Gender and Racial Differences in Predicting Recidivism.** Overall, neither gender nor race (i.e. minority status) independently predicted recidivism. Rates of recidivism for the current sample were lower than would have been expected, such that, less than 15% of the sample recidivated within the 12-month tracking period. Due to the small sample size of recidivists, certain hypotheses could not be tested. Only 10 females recidivated, all of whom were classified as either Moderate or High Risk. Thus, the predictive value of the Overall Risk to Reoffend level could not be adequately assessed for females. For the male-only sample, the risk levels performed as expected and were significant predictors of recidivism, such that Moderate and High Risk youth were between two to three times more likely to recidivate than Low Risk male youth. The

AUC effect size (.600) observed for the male-only sample was comparable to that of the overall sample.

Gender differences were apparent in the predictive value of the Criminal and Social History domain scores. AUC effect sizes for both domain scores were in the large range for female youth, whereas, for male youth, the observed AUCs were smaller than observed for the overall sample. Logistic regressions further indicated that the Criminal History domain was a better predictor of recidivism for female youth than the Social History domain. For male youth, Social History was approaching significance ( $p = .054$ ) as the better predictor of recidivism. This is contrast to previous findings of the PACT domain scores (Baglivio, 2009; Baglivio & Jackowski, 2013; Winokur, Hand, & Blankenship, 2012). Replication of this study with a larger sample of recidivists would likely increase the odds of producing significant outcomes, in the expected direction.

A larger percentage of White Non-Hispanic (57%) recidivated in the current sample. African American youth represented approximately 16% of recidivists and Hispanic youth, 36%. AUC effect sizes obtained for the Overall Risk to Reoffend level and Criminal History and Social History domain scores for White Non-Hispanic youth were higher than those observed for the total sample. For Minority youth, the Overall Risk to Reoffend level produced an AUC value (.623) which was minimally higher than that of the total sample; however, both the Criminal (.596) and Social History (.598) domain scores were noticeably lower, and just at .05 level of significance.

Differences in the AUC effect sizes between racial groups have been previously observed (Baglivio, 2009; Baglivio & Jackowski, 2013). In the current study, the PACT risk scores appear to offer marginally greater predictive value for non-minority youth.

Prior studies concluded that the overlapping confidence intervals between the various AUC effect sizes for the risk scores suggested the observed differences may not have statistical significance.

High Risk emerged as a strong predictor of recidivism for both White Non-Hispanic and Minority youth. Within each of these groups, youth identified as High Risk were between four to five times more likely than Low Risk youth to recidivate. Moderate Risk was only just a significant predictor ( $p = .049$ ) for Minority youth. Regarding the domain scores, Criminal History, was only a significant predictor for non-minority youth. Taken together, this suggests that the items comprising the domain scores may be performing in different ways between minority and non-minority youth and/or may not be capturing relevant risk data through the same mechanism.

### **Probation Outcomes**

The PACT was developed under the Risk-Needs-Responsivity (RNR) framework which recommends intervention services be appropriately matched to individuals' unique constellation of risk factors. Although not specifically intended to predict outcomes other than recidivism, this study found that the risk levels both differentiated between and predicted probation involvement at the end of the 12-month tracking period; however, as with recidivism, the differences were most apparent between High Risk and Low Risk youth.

A consistent trend, likewise observed with recidivism outcomes, was that Moderate Risk contributed variable predictive value. This could be an artifact of the small sample of recidivists or the inadequacy of the three-factor risk model. It is worth mentioning that the sample of youth who had continued probation involvement was over

twice the number of recidivists; however, Moderate Risk still did not significantly differentiate between or predict probation involvement. Such an outcome may further support the assertion that the three-factor risk model may not be appropriately classifying youth.

Also evaluated were the intervention referrals youth received as well as their successful completion of these referrals. Overall, as risk levels and domain scores increased, youth received more intervention referrals, in both type and quantity. One possibly conclusion for may be that PACT administrators are appropriately matching the level of service intensity to the level of risk; whether this is purposeful or not is unclear. Other variables, not analyzed in this study, could also account for this association, such as the severity of the offense.

Despite the relationship observed between risk levels and intensity of intervention referral, the risk levels were not related to successful intervention completion. Of the risk variables, only Criminal History was significantly and negatively correlated to intervention success. Of greater significance, it is important to note that youths' successful intervention completion decreased the more referrals they received. This suggests that referring to youth more interventions leads to a diminishing return on their likelihood of intervention success, ostensibly also influencing continued probation involvement and/or likelihood of recidivism.

### **Conclusion**

In sum, this study adds to the evidence on the PACT as being a valid instrument in predicting recidivism, using the AUC values as the standard of predictive accuracy. The gender neutrality of the PACT, with regard to the risk levels, could not be assessed

due to the overwhelming gender homogeneity; however, the risk levels appear to perform equivalently between minority and non-minority groups. Findings also suggest that utilizers of the PACT may wish to also consider the domain scores when taking steps to manage risk of re-offense; however, as these domain scores demonstrated differential performance, their overall utility in comparison to the risk levels is questionable. In addition, this study shows that the PACT risk scores can predict certain probation and treatment outcomes.

### **Implications**

Juvenile justice agencies have an array of juvenile risk assessments from which to choose. Results of the current study indicates that in Texas, agencies may be well-served by using the PACT in predicting risk for recidivism. An important caveat to this finding is the PACT's performance in comparison to other juvenile risk assessment instruments. In this study, the PACT performed as expected, such that the observed AUC effect sizes of risk predictions were modest. Other risk instruments, particularly the SAVRY, have consistently demonstrated themselves as more robust predictors of juvenile recidivism. Nevertheless, the PACT appears to be a valid measure of predicting recidivism in

The PACT was specifically designed as a tool to be periodically re-administered. In this sense, the PACT is dual purposed, moving from assessing risk to managing risk. The findings suggest that youths' referrals to interventions may have been matched to their risk level. Further, each administration of the PACT provides decision-makers with information above and beyond risk scores such that youths' psychosocial needs and possible targets of intervention are also clearly outlined. While the PACT adequately predicts risk for recidivating, perhaps the true practical strength of the PACT is in

providing a framework for decision-makers to better manage risk of recidivism. More research, however, is needed to determine the PACT's utility as a risk management instrument.

### **Limitations and Future Directions**

Despite the findings, the current study has several substantial methodological limitations. One of the study's main hypotheses was to explore gender specificity of the PACT in light of prior research suggesting risk assessments may not be gender neutral (Andrews et al., 2012; Penney, Lee, & Moretti, 2010; Shepherd, Luebbers, & Doland, 2013). Female youth represented less than 20% of our sample. Thus, any findings related to the PACT's validity with females were likely attenuated by the study's small sample size. This also eliminated the ability to assess another of the study's hypotheses related to interactions between race and gender. Consequently, future studies should endeavor to have each gender and racial group adequately represented to assess any gender and/or race specific pathways of predicting recidivism.

Another major limitation to be acknowledged is the restricted range of recidivism information made available. Although the department's case management system included data on new offenses, it was limited to their specific jurisdiction and one other county, with which they had an inter-county agreement. Consequently, it is possible that youth recidivated outside of their jurisdiction. Likewise, information about youth who committed a new offense and processed through the adult criminal justice system was not available. In Texas, youth aged 17 and older can be automatically charged as an adult for certain crimes. Given that youth ages 16 and over represented approximately 44% of the current sample, it is possible that recidivism was not adequately captured.

The retrospective design also limits the reliability of the PACT data used in this study. No information was collected, as part of this study, on the level of training or experience of the administrators of the PACT. Many of the questions, particularly in the Social History domain, require administrators to make subjective judgments based on their knowledge of the youth. As the PACT requires a degree of professional judgment, it is reasonable to hypothesize that these administrator variables may influence the ratings provided and thus provide somewhat skewed overall risk ratings.

The lack of control of these variables potentially limits the inferences made regarding the validity of the PACT, particularly in comparison to administration under rigorously controlled conditions. It is important to note that this study, as undertaken, does contribute to the ecological validity of the PACT. Moreover, despite the lack of control of potentially moderating variables, the findings suggest the PACT is performing equivalent to other youth risk assessment instruments. An area of future research may seek to address whether the PACT's predictive validity is influenced by administrator characteristics.

Mentioned earlier was the three-factor risk level model produced by the PACT used in this study. The published research on the PACT, known to this author, utilizes the PACT version which produces a four-factor risk level model. More data is needed on whether the three or four-factor risk model provides a stronger prediction of recidivism.

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## VITA

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**SHERZINE M. MCKENZIE**


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**EDUCATION**


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<p><b>In Progress</b> Huntsville, Texas</p>	<p><b>Doctor of Philosophy, Candidate</b>          Clinical Psychology, emphasis in Forensic Psychology          Sam Houston State University  <u>Dissertation</u>: <i>A Validation Study of the Positive Achievement Change Tool (PACT)</i> (<b>Chair</b>: James W. Crosby, Ph.D.)</p>
<p><b>May 2012</b> Huntsville, Texas</p>	<p><b>Specialist in School Psychology</b>          Sam Houston State University  <u>Thesis</u>: <i>Externalized Bullycide: An Examination of Bullying Impact, Victim Culpability, and Retributive Justice</i> (<b>Chair</b>: James W. Crosby, Ph.D.)</p>
<p><b>May 2008</b> Nacogdoches, Texas</p>	<p><b>Bachelor of Arts</b>          Psychology &amp; Spanish          Stephen F. Austin State University  <u>Undergraduate Thesis</u>: <i>The Contact Hypothesis and Immigrant Prejudice in Nacogdoches</i> (<b>Chair</b>: Theodore Joseph, Ph.D.)</p>

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**LICENSURE/ CERTIFICATIONS**


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<p><b>September 2017</b></p>	<p><b>Licensed Specialist in School Psychology</b>, License #70366          Texas State Board of Examiners of Psychologists</p>
<p><b>July 2016</b></p>	<p><b>Cardiopulmonary Resuscitation (CPR) and Automated External Defibrillator (AED)</b>          American Heart Association Health Care Provider</p>
<p><b>July 2016</b> (Expired)</p>	<p><b>Satori Alternatives for Managing Aggression (SAMA)</b>          UHealth – Harris County Psychiatric Center</p>

**October 2012**  
(Expired)

**Nonviolent Crisis Intervention**  
Crisis Prevention Institute

## **RESEARCH ACTIVITY**

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**Aug. 2016 – May 2017**  
Huntsville, Texas

**LoneStar Project Silver Tier Interviewer: Study of Offender Trajectories, Associations, and Reentry**

*Sam Houston State University: Huntsville, Texas*

- Conducted baseline prison interviews with offenders waiting to be released within 30 days (*National Institute of Justice funded*)
- Certified trained in Blaise computer assisted personal and telephone interviewing

*Supervisors: David Pyrooz, Ph.D. & Erin Orrick, Ph.D.*

**Aug. 2014 – July 2016**  
Huntsville, Texas

**Diversity in Forensic Issues Lab: Graduate Research Assistant**

*Sam Houston State University: Huntsville, Texas*

- Worked on various projects related to the intersection of psychology, the law, and multicultural issues specifically including English language competency

*Supervisors: Lisa Kan, Ph.D. & Jorge Varela, Ph.D.*

**Aug. 2014 – July 2015**  
Huntsville, Texas

**Victimization Studies Lab: Graduate Research Assistant**

*Sam Houston State University*

- Assisted in the data collection phase on research involving peer victimization (systemic assessment, victim traumatization and responses, intervening with bully-bystanders, and adult perceptions of peer victimization in school age-children)

*Supervisors: James W. Crosby, Ph.D., LSSP, NCSP*

**July 2008 – July 2009**  
Fort Worth, Texas

**Research Assistant**

*Organizational Wellness & Learning Systems, Inc.*

- Recruited, enrolled, and scheduled participants involved in a study of the development of a web-based prevention platform to increase health and productivity (wellness) in organizations (*National Heart, Lung, and Blood Institute funded*)
- Assisted in the development of surveys and questionnaires
- Prepared research manuscripts and research presentations
- Developed and maintained detailed and highly organized research databases

*Supervisors:* Joel Bennett, Ph.D.

**Jan. 2007 – May 2008**  
Nacogdoches, Texas

**Undergraduate Research Assistant**

*Lavoy Moore Entrepreneurship Initiative: Nacogdoches, Texas*

- Assisted the Lavoy Moore initiative with entrepreneurship research
- Additional responsibilities included collating tenure folder, creating weekly quizzes, and maintaining class records, including grades and attendance for the lead researcher

*Supervisors:* Philip Stez, Ph.D.

**PUBLICATIONS**

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**McKenzie, S.M.** & Crosby, J.W. (2017). Examining factors influencing sentencing decisions in school shootings. *Journal of Aggression, Conflict, and Peace Research*, 9(1), 38-49. doi: doi.org/10.1108/JACPR-10-2015-0193

**PAPERS/ PRESENTATIONS**

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Hale, J. L., Varela, J. G., Kan, L. Y., Boccaccini, M. T., **McKenzie, S.M.**, Wang, H.W., Jeon, H., Tan, L.; Munoz, C., & Otto, R. (2018, March). *Using the ILK with Foreign-Born Adults in the United States*. Poster presentation at the American Psychology-Law Society Annual Convention in Memphis, Tennessee.

McLaughlin, J. L., **McKenzie, S.M.**, Tan, L., Kan, L. Y., Varela, J. G., & Boccaccini, M. T. (2016, March). *Criminal Justice Implications of Differences in Listening and Reading Comprehension Abilities in Foreign-Born Adults*. Poster presentation at the American Psychology-Law Society Annual Convention in Atlanta, Georgia.

Manning, J. M., **McKenzie, S.M.**, Gonzalez, C. M., Wang, H. W., McLaughlin, J., & Kan, L. (2015, March). *A Study Space Analysis of Response Style Among*

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*Hispanics in Competency to Stand Trial Research*. Poster presentation at the American Psychology-Law Society Annual Convention, San Diego, California.

**McKenzie, S. M.**, & Crosby, J. W. (2012). *Bullying and School Shootings: Perceptions of Victim Culpability and Retributive Justice*. Paper presented at the 2012 Convention of the American Psychological Association (Orlando, FL).

Crosby, J.W., Walker, C.E., & **McKenzie, S.M.** (2012). *An Exploratory Comparison of the Bullying Experiences and Attitudes of African American and Caucasian College Students*. Poster presented at the 2012 Sam Houston State University—College of Humanities and Social Sciences First Annual Research Conference (Huntsville, TX).

**McKenzie, S. M.** (2008). *Effect of dogmatism and religiosity on attitudes to homosexuality*. Presented at the Southwestern Psychological Association 2008 Annual Convention, Kansas City, Missouri.

Oldenkamp, J.L., Scott, B.G., & **McKenzie, S.M.** (2008). *The effect of commercial content on free recall and a forced choice task*. Poster presented at the Southwestern Psychological Association 2008 Annual Convention, Kansas City, Missouri.

**McKenzie, S.M.**, & Hastings, H. (2007). *The role of contact in assessing police effectiveness and professionalism*. Poster presented at the Collin County Community College Psi Beta Synergy 2007 Conference, McKinney, Texas.

## CLINICAL EXPERIENCES

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**INTERNSHIP TRAINING:**            **Clinical Psychology Intern**  
University of Tennessee Health Science Center, Memphis Tennessee

**Aug. 2017 – Aug. 2018**        **Parent Child Interaction Therapy (PCIT) Clinic**

*Training Description:*

- Provided evidence-based treatment model (Eyberg & Funderburk, 2011) with highly specified, step-by-step, live-coached sessions with both the caregiver(s) and the child
- Attended didactic and experiential trainings on the PCIT protocol
- Received direct clinical service provision with live supervision

*Supervisor(s):* Lisa Asbill, Ph.D. & Jessica Houston, Ph.D.

**Apr. 2018 – Aug. 2018**

**Juvenile Court of Memphis & Shelby County**

*Training Description:*

- Will conduct assessments to assist with the identification of mental health and other special needs and risks in court-involved youth
- Will provide recommendations to the court regarding treatment, psychoeducational, vocational, mentoring, and/or other intervention services, and further specialized evaluation, if indicated

*Supervisor:* Tucker Johnson, Ph.D.

**Apr. 2018 – Aug. 2018**

**Child & Adolescent Psychiatry, UTennessee Health Science Center**

*Training Description:*

- Will provide family and individual therapy with children and adolescents of all ages and presenting problems from a systems-based approach
- Will provide peer supervision and consultation to graduate students and medical residents

*Supervisor:* Melissa Hoffmann, Ph.D.

**Dec. 2017 – Apr. 2018**

**Center of Excellence for Children in State Custody**

*Training Description:*

- Will conduct extensive record reviews and assessments (clinical interviews, psychological testing) of children and adolescents who are in or at risk of state custody
- Will observe and participate in multi-disciplinary case conferences as well as consult with DCS case managers, treatment providers, and caregivers
- Will learn disseminating evidenced-based treatments such as Trauma Focused-Cognitive Behavioral Therapy (TF-CBT) and Attachment, Self-Regulation, and Competency (ARC)

*Supervisor(s):* Melissa Hoffmann, Ph.D., Jessica Houston, Ph.D., & Lisa Asbill, Ph.D.

**Dec. 2017 – Apr. 2018**

**West Tennessee Forensic Services, Inc.**

*Training Description:*

- Will conduct court-ordered forensic evaluations of adults and juvenile offenders to assess competency to stand trial and mental condition at the time of the alleged offense
- Will consult with defense and prosecuting attorneys and on an as needed basis
- Will have the opportunity to observe courtroom testimony

*Supervisor(s):* Wyatt Nichols, Ph.D. & Debbie Nichols, M.S.W.

**Aug. 2017 – Dec. 2017**

**St. Jude Children’s Research Hospital: Pediatric Neuropsychology**

*Training Description:*

- Conducted neuropsychological assessments and screeners to children and adolescents with a history of brain tumors and sickle cell disease
- Observed brief bedside assessment with inpatients for monitoring recovery following acute neurologic events
- Attended bi-monthly neuropsychology trainee didactics and weekly multidisciplinary brain tumor and psychology grand rounds

*Supervisor:* Darcy Raches, Ph.D.

**Aug. 2017 – Dec. 2017**

**Exchange Club Family Center**

*Training Description:*

- Conducted risk assessments of ongoing violence and treatment needs in court-referred domestic violent offenders
- Conducted individual, parenting, and family therapy sessions and facilitated coordination of care for clients interfacing with multiple community agencies

*Supervisor:* Catherine Collins, Ph.D.

**DOCTORAL TRAINING: Practicum Student Clinician**

Sam Houston State University

**Aug. 2013 – May 2017**  
Huntsville, Texas

**Psychological Services Center**

*Training Description:*

- Conducted individual therapy for diverse, rural, and low-income community members with an emphasis on using empirically supported treatments (CBT and DBT)
- Completed psychodiagnostic and psychoeducational evaluations for individuals aged 8 to 65
- Performed treatment planning, discharge planning, and suicide risk management with clients and supervisors
- Attended weekly clinic case conferences and clinic administration

*Supervisor(s):* Lisa Kan, Ph.D., Craig Henderson, Ph.D., Darryl Johnson, Ph.D., Adam Schmidt, Ph.D., & Jorge Varela, Ph.D.

**July 2016 – May 2017**  
Houston, Texas

**University of Texas-Harris County Psychiatric Center**

*Training Description:*

- Provided group/ milieu therapy with a focus on mindfulness, interpersonal effectiveness, emotional processing, and basic psychological skills (e.g., cognitive restructuring, positive coping skills, behavioral activation, etc.) for adolescent inpatients with and without juvenile justice involvement
- Conducted psychodiagnostic and cognitive/neuropsychological assessments for patients in the Early Onset Pilot Project (EOPP) program as well as patients on acute units with a range of presentation from severely mentally ill to neurocognitively impaired
- Provided individual therapy using empirically-supported treatments (CBT, CPT, DBT, and MI) to adults, adolescents and children on acute units
- Engaged in crisis intervention and conducted suicide and homicide safety plans
- Attended and participated in treatment team meetings addressing treatment needs, concerns, and modifications for patients

*Supervisor(s):* Madhavi Reddy, Ph.D, Elaheh Ashtari, Psy.D., Ana Ugueto, Ph.D., & Kristin Calverley, Ph.D.

**June 2015 – June 2016**  
Conroe, Texas

**Montgomery County Juvenile Probation Department**

*Training Description:*

- Conducted court and probation-ordered psychodiagnostic, integrated assessments for risk, treatment planning, and diagnostic clarification
- Common diagnostic categories included: behavioral disorders, attentional and learning disorders, mood and anxiety disorders, trauma and stressor-related disorders
- Provided recommendations to assist probation department in placement and probation requirement decisions

*Supervisor(s):* Darryl Johnson, Ph.D. & Jorge Varela, Ph.D.

**SPECIALIZED FORENSIC TRAINING**

**Oct. 2014 – May 2017**  
Huntsville, Texas

**Assistant Forensic Evaluator**

*Training Description:*

- Conducted court-ordered evaluations which consist of a detailed clinical interview and review of records
- Co-authored reports for adult and juvenile forensic evaluations including evaluations of competence to stand trial, fitness to proceed, criminal responsibility, and juvenile certification to adult court
- Provided diagnostic information and treatment recommendations

*Supervisor(s):* Mary Alice Conroy, Ph.D., ABPP,  
Darryl Johnson, Ph.D. & Wendy Elliott,  
Ph.D.

**September 2015**  
Huntsville, Texas

**Sexually Violent Predator (SVP) Co-Evaluator**

*Training Description:*

- Participated in Texas SVP evaluation of inmates incarcerated at the Texas Department of Criminal Justice, L.V. Hightower Unit to determine risk for recidivism and appropriateness for civil commitment using the Psychopathy Checklist-Revised (PCL-R) and Static-99R

*Supervisor(s):* Jorge Varela, Ph.D. (Private Contractor)

**Sept. 2014 – Oct. 2014**  
Conroe, Texas

**Group Therapist: Family Assault Program**

*Training Description:*

- Co-facilitated two six-week family therapy interventions teaching and emphasizing skills on anger management, emotion regulation, and effective communication to parents and their justice-involved children

*Supervisor(s):* Darryl Johnson, Ph.D.

## SCHOOL PSYCHOLOGY TRAINING

**Aug. 2012 – May 2013**  
Huntsville, Texas

**Licensed Specialist in School Psychology, Trainee**  
Huntsville Independent School District

*Training Description:*

- Conducted psychoeducational evaluations to (re)assess students' need for special education services
- Facilitated Admission/ Review/ Dismissal (ARD) meetings to review students' needs for special education services
- Provided parents and teachers with feedback and recommendations individually and in ARD meetings
- Provided behavioral consultation with school personnel and conducted functional behavior assessments to implement needed positive behavior supports
- Conducted individual therapy, as needed, to students from elementary to high-school aged with diagnoses of mood, anxiety, disruptive behavior, and autism spectrum disorders

*Supervisor(s):* Roxann Hays, M.A., LSSP

**Aug. 2011 – May 2012**  
Huntsville, Texas

**School Psychology Intern**  
Huntsville Independent School District

*Training Description:*

- Conducted psychoeducational evaluations to (re)assess students' needs for special education services
- Provided academic consultation with school personnel which included conducting baseline, progress monitoring, and assessment of the effectiveness of implemented academic interventions

*Supervisor(s):* Gordon Lamb, Ph.D., LSSP, & Roxann Hays, M.A., LSSP

- Jan. 2011 – May 2011**  
Coldspring, Texas
- Practicum in School Psychology**  
Coldspring-Oakhurst Consolidated School District  
*Training Description:*
- Conducted psychoeducational evaluations of students, elementary and middle-school aged, to evaluate the need for special education services
  - Provided weekly counseling to middle-school aged students
- Supervisor(s):* Ramona Noland, Ph.D., LSSP, NCSP,  
Jennifer Stewart, M.A., LSSP &  
Shannon Wallace, M.A., LSSP
- Aug. 2010 – Dec. 2010**  
Huntsville, Texas
- Practicum in School Psychology**  
Huntsville Independent School District  
*Training Description:*
- Weekly observation of elementary general education, adaptive behavior, and life skills classrooms
- Supervisor:* James W. Crosby, Ph.D., LSSP, NCSP

#### **OTHER CLINICAL TRAINING EXPERIENCES**

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- June 2016**
- Early Prevention and Intervention for Borderline Personality Disorder in Youth:** University of Houston ADAPT Center; National Education Alliance for Borderline Personality Disorder; Menninger Clinic  
*Presenter(s):* Carla Sharp, Ph.D. Karyn Hall, Ph.D. & Efrain Bleiberg, MD
- April 2016**
- The Challenges of Providing Adequate Services to Individuals in the Justice System: The RNR Simulation Tool**  
*Presenter:* Faye Taxman, Ph.D.
- October 2015**
- Title IX and its Implications for Psychologists**  
*Presenter:* Jeanine Bias, SHSU Title IX Coordinator
- April 2015**
- Woodcock-Johnson IV and WISC-V: Updates in Administration and Interpretation**  
*Presenter:* Ramona Noland, Ph.D., LSSP
- November 2014**
- Callous-Unemotional Traits and Conduct Disorder: Implications for Understanding, Diagnosing, and Treating Antisocial Youths**  
*Presenter:* Paul Frick, Ph.D.
- October 2014**

<b>October 2014</b>	<b>The Innocence Project of Texas</b>
<b>January 2014</b>	<i>Presenter:</i> Nick Vilbas, J.D.
	<b>Disability Issues in Psychological Practice</b>
	<i>Presenter:</i> Randy Cox, Ph.D.
<b>Aug. 2013 – May 2014</b>	<b>The Role of Forensic Psychologists in Family Law Matters</b>
	<i>Presenter:</i> Michael Gottlieb, Ph.D., ABPP
<b>Sept. – Dec. 2013</b>	<b>Clinical and Conceptual Problems in the Attribution of Malingering in Forensic Evaluations</b>
	<i>Presenter:</i> Richard Frederick, Ph.D., ABPP
	<b>Supervision Seminar: Evidence-based Supervisory Practices and Ethical Considerations</b>
	<i>Presenters:</i> Mary Alice Conroy, Ph.D., ABPP & Jorge Varela, Ph.D.
	<b>Dialectical Behavior Therapy Training Seminar</b>
	<i>Presenter:</i> Lisa Kan, Ph.D.

#### **INSTRUMENT PROFICIENCY**

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<b>Academic Monitoring</b>	DIBELS NEXT • AIMSweb
<b>Adaptive Behavior</b>	ABAS-3 • ILS • VABS-3
<b>Cognitive/ Achievement</b>	CELF-5 • CTOPP • CVLT-C • CVLT-2 • EVT-2 • KABC-II KTEA-II • PPVT-4 • TOPF • WAIS-IV • WASI-II • WIAT-III WISC-V • WJ-COG-IV • WJ ACH-IV • WPPSI-III
<b>Forensic</b>	ILK • M-FAST • REY-FIT • SIRS-2 • TOMM
<b>Neuropsychological</b>	BEERY VMI • BRIEF • CPT-3 • DKEFS • GROOVED PEGBOARD MOCA • RBANS • TEA-Ch • WRAML2
<b>Psychological</b>	ADOS-2 • ASRS • BAARS-IV • BAI • BASC-3 • BDI-II CARS-2 • CDI-2 • CBRS • CSSRS • GADS • GARS-3 MMPI-2 • OQ-30 • OQ-45 • PAI • RCMAS-2 • SAED-2 SCID-5 • SSIS

#### **RELEVANT/ SPECIALIZED COURSEWORK**

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<b>Spring 2017</b>	<b>Mental Health Law</b> <i>Instructor:</i> Phillip Lyons, J.D., Ph.D.
<b>Fall 2016</b>	<b>Empirically Supported Treatments</b> <i>Instructor:</i> David Nelson, Ph.D., ABPP
<b>Spring 2015</b>	<b>Forensic Assessment II</b> (emphasis: civil and juvenile forensic evaluations and mock testifying) <i>Instructor:</i> Mary Alice Conroy, Ph.D., ABPP
<b>Fall 2014</b>	<b>Forensic Assessment I</b> (emphasis: criminal forensic evaluations) <i>Instructor:</i> Mary Alice Conroy, Ph.D., ABPP
<b>Spring 2014</b>	<b>Couple and Family Therapy</b> <i>Instructor:</i> Craig Henderson Ph.D.
<b>Spring 2010</b>	<b>Neuropsychopharmacology</b> <i>Instructor:</i> Christopher Wilson, Ph.D.

#### **SUPERVISORY EXPERIENCES**

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<b>Aug. 2015 – May 2016</b> Huntsville, Texas	<b>Peer Supervisor</b> Psychological Services Center <ul style="list-style-type: none"> <li>○ Supervised second-year doctoral students as they conducted psychotherapy and psychodiagnostic assessments with clients at a community mental health clinic</li> <li>○ Co-facilitated supervision sessions with licensed supervisor</li> <li>○ Reviewed therapy and assessment videos and provided written and verbal constructive feedback</li> </ul> <i>Supervisor(s):</i> Craig Henderson, Ph.D. & Darryl Johnson, Ph.D.
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## MENTORSHIP/ SERVICE EXPERIENCE

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- Aug. 2015 – Aug. 2016**  
Huntsville, Texas
- Student-Faculty Representative (Elected)**  
*Clinical Psychology Doctoral Program: Sam Houston State University*
- Advocated for and implemented substantive changes to the program's operating procedures such as reinstating a student mentorship program and creating documents for use to organize and streamline practicum site requests
  - Collected and communicated students' concerns to faculty in a timely manner while being aware of the need for privacy and confidentiality
  - Coordinated events within the program including interview weekend and monthly brown bag research seminars and invited speaker and/or potential faculty visits
  - Attended weekly faculty meetings during to facilitate communication of information between faculty and students
- Aug. 2013 – Aug. 2014**  
Huntsville, Texas
- First Year Experience: Graduate Assistant**  
*Student Success Initiatives: Sam Houston State University*
- FORWARD Liaison – provided mentorship and support former foster, adopted orphaned, homeless, ward of the court youth at SHSU

## TEACHING EXPERIENCE

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- Aug. 2014 – May 2015**  
Huntsville, Texas
- Teaching Assistant: Instructor**  
*Sam Houston State University*  
Introduction to Psychology (PSYC 1301)
- Summer 2010**  
**Spring 2011**  
Huntsville, Texas
- Teaching Assistant: Instructor**  
*Sam Houston State University*  
Elementary Statistics (PSYC 3301/3101)
- July 2010**  
Huntsville, Texas
- Guest Lecturer: Verbal Learning- Language Development**  
*Sam Houston State University*

- Aug. 2009 – Dec. 2010**  
Huntsville, Texas  
**Teaching Assistant: Instructor**  
*Sam Houston State University*  
Elementary Statistics (PSYC 3301/3101)
- Jan. 2006 – Dec. 2007**  
Nacogdoches, Texas  
**Supplemental Instructor**  
*Stephen F. Austin State University: Academic Assistance & Resource Center*  
United States History 1877: Present

## INVITED PRESENTATIONS

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- November 2016**  
**Treating Adolescent Posttraumatic Stress in Inpatient Settings**  
*UT-Harris County Psychiatric Center*
- Presented a clinical case and relevant literature on factors affecting treatment of adolescent posttraumatic stress in inpatient settings
- October 2016**  
**Posttraumatic Stress, Autism, and Sexual Abuse and Offending**  
*UT-Harris County Psychiatric Center*
- Presented a clinical case and relevant literature on the role of sexual trauma history in the development of posttraumatic stress in individuals with Autism Spectrum Disorders
- October 2015**  
**Juvenile Substance Abuse and Systemic Factors Affecting Treatment**  
*Psychological Services Center*
- Presented a clinical case and relevant literature regarding the assessment and treatment needs for juveniles with substance use disorders, low parental support, and involvement in the justice system
- November 2013**  
**Schema-Focused Therapy**  
*Psychological Services Center*
- Presented a clinical case and relevant literature pertaining to the use of schema-focused therapy for borderline personality disorder
- October 2013**  
**SHSU Psi Chi & Psychology Club Graduate School Application Workshop**  
*Psychological Services Center*
- Panel presenter to undergraduate psychology students on applying to graduate school

- October 2013**                      **Grey Matter: Highlighting Mental Illness**  
*Sam Houston State University*
- Guest speaker co-facilitating discussion about mental illness affecting college students and minority individuals to the campus branch of the National Association for the Advancement of Colored People (NAACP)
- May 2012**                              **Evaluating Emotional Disturbances for Special Education Needs**  
*Psychological Services Center*
- Presented a clinical case and relevant literature pertaining to the use of conducting a psychoeducational evaluation to assess for an emotional disturbance in determining the need for special education services
  - Discussed the implications for an individual displaying the behaviors associated with an emotional disturbance but not demonstrating an educational need for services in the school setting
- October 2013**                      **Traumatic Brain Injury in Academic Populations**  
*Sam Houston State University*
- Presented an overview of the field's knowledge based regarding traumatic brain injuries and implications for school-based mental health professionals

## **HONORS AWARDS**

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- August 2017**                      **College of Humanities and Social Sciences Internship Scholarship (\$5000)**  
 Sam Houston State University
- Spring 2017**                      **College of Humanities and Social Sciences Scholarship (\$2000)**  
 Sam Houston State University
- Spring 2016**                      **Conference Travel Assistance Award (\$1000)**  
 Sam Houston State University
- Spring 2015**                      **Conference Travel Assistance Award (\$1000)**  
 Sam Houston State University
- Spring 2015**                      **University Excellence in Teaching Award (Nominee)**  
 Sam Houston State University

- Spring 2015**                      **Outstanding Teaching Assistant Award** (*Nominee*)  
Sam Houston State University
- Aug. 2009 – May 2012**      **Special Graduate Scholarship Award (\$500/semester)**  
*Sam Houston State University*
- April 2008**                      **Undergraduate Research Competition 3rd Place**  
*Southwestern Psychological Association 2008 Annual  
Convention*
- Spring 2008**                      **Outstanding Undergraduate Research Award**  
*Stephen F. Austin State University – Psychology  
Department*
- Spring 2008**                      **College of Liberal and Applied Arts Research Award**  
*Stephen F. Austin State University*

#### **PROFESSIONAL AFFILIATIONS**

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American Psychology-Law Society  
Texas Association of School Psychologists  
Psi Chi National Psychology Honor Society

#### **REFERENCES**

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**James W. Crosby, Ph.D., NCSP, LSSP**  
Research Supervisor  
Sam Houston State University  
Interim Chair, Department of Psychology  
and Philosophy  
Huntsville, TX 77341

**Darcy Raches, Ph.D.**  
Clinical Neuropsychologist  
St. Jude Children's Research Hospital  
Department of Psychology  
Memphis, TN 38105

**Mary Alice Conroy, Ph.D., ABPP**  
Director, Psychological Services Center  
Sam Houston State University  
Huntsville, TX 77341

**Darryl Johnson, Ph.D.**  
Staff Psychologist: Clinical Supervisor  
Psychological Services Center  
Huntsville, TX 77341

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