ASSESSING TRAUMA SYMPTOMOLOGY IN JUVENILE YOUTH USING THE MMPI-A-RF

by

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(Under the Direction of Brian A. Glaser)

ABSTRACT

The current study investigated the clinical utility of the Minnesota Multiphasic Personality Inventory for Adolescents, Restructured Form (MMPI-A-RF) to identify differences among juvenile youth that reported experiencing trauma compared to those who did not, as well as, clinical scale differences in gender for individuals that reported trauma history. In addition, authors explored differences at the item level and predictive accuracy for statistically significant clinical scales and items for youth that experienced trauma. Method: Retrospective data of 308 adjudicated youth (79.5% males) referred for psychological services participated in the study. Results: A one-way MANOVA analysis demonstrated juvenile youth that have experienced trauma are likely to endorse higher clinical scale scores on 19 of 42 clinical scales. Another one-way MANOVA analysis revealed females are more likely to endorse higher clinical scale scores on 26 of 42 clinical scales. As a whole, Hierarchical Binary Logistic Regression analyses determined clinical scales significant for trauma are predictive by a rate of 64.9% accuracy. One clinical scale specifically was successful for predicting trauma, Malaise, however, a Stepwise Discriminant Analysis indicated two of eight items answered false on this scale were significant predictors for determining who does not have trauma. Overall, the MMPI-A-RF appears to be a

useful tool to assist clinician's assessment of trauma symptoms to inform treatment, though further research is necessary regarding the validity, reliability, and generalizability of the MMPI-A-RF.

INDEX WORDS: Trauma, Assessment, Juvenile Offender, Gender, MMPI-A, MMPI-A-RF, Adjudicated Youth

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DEDICATION

This dissertation is dedicated to my parents, brother, grandparents, colleagues, and friends that inspired and encouraged me to pursue my dreams of obtaining a doctorate in psychology. Specifically, dedications include my parents, who instilled my values of compassion and kindness to serve and advocate for underprivileged communities. I would also like to thank my academic advisor, co-investigators, committee, and former colleagues in Morgantown, West Virginia that believed in me and helped me identify my life's calling, for work with minorities impacted by various complex systems and mental health stigma. Lastly, I dedicate this text to youth affected by numerous adversities within complex social systems that are often misunderstood yet remain resilient. You are survivors, you are worthy, you matter, and *it does* get better.

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CHAPTER I

INTRODUCTION

STATEMENT OF THE PROBLEM

In the United States, child abuse, exposure to violence, and other traumatic events are considered the largest public health problem that is not adequately being addressed (Branson, Baetz, Horwitz, & Hoagwood, 2017; van der Kolk, 2014). Most Americans will endure at least one type of traumatic event prior to age 18, and specifically for individuals involved in the juvenile justice system, about 90% have experienced some type of trauma (Branson et al., 2017; Fox, Perez, Cass, Baglivio, & Epps, 2015). Trauma experienced by juvenile offenders may include physical or sexual abuse, witnessing domestic violence, exposure to violence in school or the community, and other adverse childhood experiences (Branson et al., 2017; Fox et al., 2015). Further, once incarcerated, juveniles are at an increased risk of experiencing additional trauma that may intensify any psychological distress and possibly worsen legal outcomes of their case (Branson et al., 2017). Juvenile offenders with a trauma background are 200% more likely to commit violent behavior(s) and the odds of serious, chronic, and violent offending also increases (Fox et al., 2015). Therefore, individuals who become incarcerated at a young age should be properly assessed and treated for mental health concerns by educated professionals.

Attending to the mental health needs of juvenile youth is prominent, though most recent statistics suggest that crimes committed by youth have continued to decline in the United States (Scott & Brown, 2018). In the latest estimate, there were approximately 728,280 juvenile arrests in 2018, however, arrests for female juvenile offenders have risen to 30% in from 2015-2018

since 20% in 1985 (Office of Juvenile Justice and Delinquency Prevention [OJJDP], 2019b; OJJDP, 2019c; Scott & Brown, 2018; Wylie & Rufino, 2018). In the early 2000s, about two million juvenile offenders were arrested per year, but since 2008, arrests for youth have with significantly declined (OJJDP, 2019b). Though overall crime trends are lower, states still pay tens to hundreds of thousands of dollars annually to hold a single juvenile offender in a corrections or other residential facility (Pew Charitable Trusts, 2015). For example, in Georgia, housing an offender cost $91,126 in 2013, while it was $179,400 in California in 2012 (Pew Charitable Trusts, 2015). Fox et al. (2015) reported one violent offense can cost up to $64,000 and a typical criminal career can cost between 2.47 and 3.34 million per offender. While many states have made efforts to combat financial costs of housing for juvenile offenders, reducing costs from society remains a primary concern (Pew Charitable Trusts, 2015).

Without initiatives to effectively rehabilitate juvenile offenders, the likelihood of reoffending in the future increases, especially for individuals that have experienced trauma. According to Wylie and Rufino (2018), adolescents with a history of abuse, neglect, person and property crime victimization, substance use, and other adverse childhood experiences are more likely to recidivate compared to individuals without traumatic experiences. Additionally, for females, a history of sexual abuse is the strongest predictor for recidivism (Wylie & Rufino, 2018). If symptoms of trauma and stress are not reduced while incarcerated, individuals are not only likely to reoffend upon placement in the community, but they are also at high risk for experiencing health difficulties across the lifespan (Maschi, Viola, & Koskinen, 2015). Therefore, altering the way mental health professionals approach interventions with juvenile youth has become increasingly important. Broadly, creating juvenile justice systems that emphasize trauma informed care from all staff members, as opposed to a punitive approach, will

promote alternative ways to help youth cope with their life circumstances, enhance their overall well-being, and allow them to continue to engage in safe and healthy behaviors (Pickens, 2016; Rapp, 2016). With adequate assessment and interventions for youth who have experienced trauma, as well as, psychoeducation for detention staff, the aim is to reduce recidivism, thus reducing tax-payer cost, and rehabilitating juvenile offenders long-term.

CONTEXT WITHIN COUNSELING PSYCHOLOGY

Counseling Psychology's identity consists of having a commitment to social justice, advocacy, prevention, strengths, multiculturalism, and the acceptance of people as they are (Delgado-Romero, Lau, and Shullman, 2012). Many of the areas within Counseling Psychology pertain to juvenile justice since the field aims to produce research that enhances multiculturalism and ultimately influences social policies in the role of advocacy (Toporek, Kwan, & Williams, 2012). According to Leiber, and Fix (2019), minority groups are largely overrepresented in all stages of the juvenile justice process, specifically for African-American and Hispanic youth across the United States. Black youth remain twice as likely to be arrested compared to white youth, which appears to be influenced by implicit bias, though overt discrimination may still exist (Leiber & Fix, 2019). Counseling Psychology's commitment to multiculturalism and social justice extends to decreasing racialization, which involves stigma and prejudice for minority groups (Quintana, Chew, & Schell, 2012). Additionally, many of the youth that become involved in the justice system come from neighborhoods affected by crime, violence, poverty, and loss that extends to frequent exposure to trauma (Rapp, 2016). Likewise, unprocessed trauma is transmitted from one generation to the next as marginalized groups experience ongoing stress from oppression that is communicated through silence, avoidance, and repeated experiences of trauma (Benjamin & Carolissen, 2015). The social justice component of Counseling Psychology

seeks to ensure equity through the facilitation of change for social institutions, political and economic systems, governmental structures, or policies that reinforce unfair practices, limit accessibility, and/or minimize access to human rights (Toporek, et al., 2012). Thus, assisting juvenile youth gain improved access to proper rehabilitative care individually, while also emphasizing the importance of care on a systemic level, fits within the realm of Counseling Psychology.

Predominantly for this study, the focus of research includes adequately assessing and treating trauma symptomology for juveniles that enter the justice system. Juvenile youth frequently have one to several co-morbid mental health disorders that if treated, could ultimately reduce crime (Cuellar, McReynolds, & Wasserman, 2006; Espinosa, Sorensen, & Lopez, 2013). Current research in Counseling Psychology has focused on prevention and strength-based approaches to help individuals improve their overall well-being (Romano, Koch, & Wong, 2012). In addition, prevention approaches are associated with social justice because if the incidence of a disorder is reduced, the whole community may benefit (Romano, Koch, & Wong, 2012). However, Cuellar et al. (2006) asserted that often, people are misdiagnosed or not diagnosed with the core root of their mental health concern(s). According to Tossone, Butcher, and Kretschmar (2017), 94% of juvenile facilities have access to mental health services, though treatment varies widely. If mental health screenings are offered, results may not be valid or professionals in detention settings may not have the resources to treat youth adequately (Tossone et al., 2017). The core values facilitated in Counseling Psychology research promote social justice and aim to reduce systemic barriers within juvenile justice and advocate through the influence of policy on a broader level (Toporek, et al., 2012). Decreasing oppression, distributing resources equally, and improving training for assessment and multicultural competencies will

assist professionals in accepting the individuals they serve in order to promote positive growth (Delgado-Romero et al., 2012; Kozan & Blustein, 2018; Romano, Koch, & Wong, 2012). Therefore, the field of Counseling Psychology incorporates values that reflect the need to assist juveniles in the community that predominantly consist of marginalized populations affected by poverty, traumatic stress, and other mental health disorders so that they receive proper evaluation and treatment services upon entrance to the juvenile justice system.

PURPOSE OF THE STUDY

The purpose of this study is to accurately identify and assess trauma symptomology among juvenile youth using a newly integrated standardized psychological instrument, the Minnesota Multiphasic Personality Inventory for Adolescents, Restructured Form (MMPI-A-RF), adapted from its original version, the Minnesota Multiphasic Personality Inventory for Adolescents (MMPI-A). Determining the significance of using the instrument will be additive for mental health professionals working with juvenile youth so that they can adapt the focus of treatment interventions for identified trauma symptomology in juvenile offenders.

Additionally, as the current study provides evidence for areas of focus for treatment for juveniles that have experienced trauma, the overall goal is to prevent long-term consequences for offending or reoffending. Juvenile delinquent youth are of higher risks for experiencing different types of trauma and this research is directed at finding evidence for mental health providers to better assess and treat symptoms of trauma using the MMPI-A-RF. The MMPI-A-RF was released in 2016 and is a self-report inventory that measures psychopathology and personality traits (Handel, 2016). This study will include archival data from male and female adolescent juvenile offenders from the ages of 14-17 years old. Though this research is aimed at identifying differences between biological sexes, it is recognized that adolescents may identify as gender

nonconforming youth. Data collected and evidence of trauma will be determined through self-report from juvenile offenders that were mandated by the state of Georgia to receive psychological evaluation or counseling services following adjudication from graduate students at the University of Georgia involved in the Juvenile Counseling and Assessment Program (JCAP). JCAP is a research and treatment program for juvenile youth within the Counseling Psychology program that involves masters and doctoral level students. The participants were identified and placed in one of two separate categories regarding their experience of trauma status.

The study seeks to examine differences between the MMPI-A-RF clinical scales and items among juvenile offenders with and without a reported trauma history, in addition to differences among gender. Each clinical scale will be examined for classifying the presence or absence of previous trauma exposure(s) among adjudicated youth. Specific items and scales that prove significant will also be examined regarding their predicative utility for accurate classification of trauma histories. Previously published studies by Murray, Glaser, and Calhoun (2013) and Edner, Glaser, Calhoun, and Connelly (2018) demonstrated efficacy of the MMPI-A and use in assessment of trauma among several other measures as part of JCAP. This literature will enhance previous research as a guide that remains up to date with the latest release of available assessments for juvenile youth.

Research Questions

1. Are there differences between the MMPI-A-RF clinical scales among youth who endorsed experiences of trauma verses youth who did not report trauma history?

   Hypothesis 1: There are significant differences between clinical scales on the MMPI-A-RF among juvenile offenders that reported a history of trauma versus those that did not report trauma history.

2. Are there gender differences in the identified MMPI-A-RF clinical scales for individuals that reported trauma history?

   Hypothesis 2: There are gender differences among juveniles that endorsed experiencing trauma compared to those that did not endorse a trauma history on MMPI-A-RF clinical scales.

3. Do the clinical scales on the MMPI-A-RF that were identified of significance for distinguishing juveniles that endorsed experiencing trauma, accurately predict juveniles who have a reported history of trauma?

   Hypothesis 3: The MMPI-A-RF clinical scales identified of significance can accurately predict juveniles that have reported trauma history compared to those that did not report a trauma history.

4. Are there differences between MMPI-A-RF item level responses within statistically significant and predictive clinical scales that identified juvenile offenders with a reported history of trauma versus juvenile offenders without trauma history?

   Hypothesis 4: Item level responses on the MMPI-A-RF within statistically significant and predictive clinical scales can be identified that distinguish juveniles that reported experiencing trauma compared to those that did not endorse experiencing trauma.

5. Do the item level responses within specific clinical scales on the MMPI-A-RF that were identified of significance and predictive for distinguishing juveniles that endorsed experiencing trauma, accurately predict juveniles who have a reported history of trauma?

   Hypothesis 5: The MMPI-A-RF item level responses that are identified of significance within specific predictive clinical scales can accurately predict juveniles that have reported trauma history compared to those that did not report a trauma history.

DEFINITION OF TERMS

- **Adjudicated Youth; Juvenile Offender:**
  - Adolescents involved in the juvenile justice system aged 12-17 will be referred to as Adjudicated Youth and/or Juvenile Offenders within the framework of this study.
- **Assessment:**
  - For the purposes of this research, the terms assessment and evaluation will refer to the use of scientifically based clinical instruments that support accurate mental health diagnoses (Suhr, 2015). Assessment instruments may include clinical data regarding personality, psychopathology, cognitive functioning, interviews, observations, and self-report measures (Suhr, 2015). Described throughout the dissertation will be the terms assessment, instrument, measure, and scale that will be used interchangeably.
- **Trauma:**
  - Traumatic events typically threaten the ability to survive including injury, death, or the safety of the self and others (American Psychological Association, 2008). Events of trauma can include various types of abuse (including physical, emotional, or sexual), domestic violence, neglect, exposure to community and school violence, medical trauma, terrorism, natural disasters, sudden or violent losses of a loved one, exposure to familial or personal substance abuse, military stressors, and many others (American Psychological Association, 2008; National Child Traumatic Stress Network, n.d.).

- **Complex Trauma:**
    - Complex trauma describes symptoms of extensive, repeated trauma(s) that is chronic and began at a young age (Wamser & Vandenberg, 2013). These events are typically more severe and result in profound outcomes that impair emotional and behavioral self-regulation, attention, consciousness, and interpersonal and identity problems. Complex traumatic events may include child sexual, physical, or emotional abuse, neglect, witnessing domestic violence, or participation in a refugee camp (Wamser & Vandenberg, 2013).
- **Posttraumatic Stress Disorder (PTSD):**
    - According to the *Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition* (DSM-V), PTSD is explained as an exposure to an actual or threatened event including death, serious injury, or sexual violence (American Psychiatric Association, 2013). The following criteria symptoms must be met in order for the diagnosis of PTSD:
        - Intrusion: Re-experiencing the events(s) through distressing memories, thoughts, dreams, dissociative reactions, and/or psychological or physiological distress in response to reminders of event
        - Avoidance of reminders of event(s) including memories, thoughts, feelings, people, places, activities, or situations that arouse distress
        - Negative cognitions or moods associated with the traumatic event(s) including inability to remember due to dissociative amnesia, negative beliefs about the self or world, self-blame or the blaming of others,

ongoing negative emotional state, disinterest in activities, detachment from others, and/or an inability to experience positive emotions

- Emotional reactivity associated with the traumatic event(s) including irritability, outbursts, self-destructive behavior, hypervigilance, being easily startled, difficulty concentrating, and/or sleep disturbance
- Other symptoms stemming from trauma in addition to the diagnosis of PTSD include dissociative symptoms of depersonalization (detached from or an observer of one's self) and derealization (experiences of unreality or dreamlike)
- The World Health Organization released the *International Classification of Diseases, 11th Revision* in 2018 that includes the diagnosis of complex PTSD that includes six clusters: reexperiencing, avoidance, hypervigilance, and three disturbances of self-organization or symptoms of emotional dysregulation, interpersonal difficulties, and negative self-concept (Darnell, Flaster, Hendricks, Kerbrat, & Comtois, 2019; Jowett, Karatzias, Shevlin, & Albert, 2019).

CHAPTER II

REVIEW OF RELAVANT LITERATURE

Though research for adolescent offenders suggests crime rates have declined, the rate of incarceration remains high for juveniles and adults alike (Scott & Brown, 2018; Sellbom, 2014). In 2011, the total incarcerated population in the United States was roughly 2.3 million inmates, while the total amount of individuals involved in the correctional system exceeded over seven million, or one in every 48 adults (Sellbom, 2014). Recent data suggests about 10.5 million arrests were made in 2017, though only 30% included young adolescents/adults aged 15-24 years-old (OJJDP, 2019a). Specifically, juveniles ages 15–17 accounted for 19% of arrests of persons ages 15–24 (OJJDP, 2019a). Kapp, Petr, Robbins, and Choi (2013) asserted 600,000 juvenile offenders are processed through juvenile detention centers each year, while more than 100,000 are held in secure juvenile correctional facilities. According to OJJDP (2019d), most recent data indicated that youth are predominantly held in local (69%) and state (22%) facilities compared to private (9%) and that male youth over age 15 were more likely to be committed than detained. Collectively, costs from the correctional system on society is estimated to be more than $70 billion (Sellbom, 2014). In addition to the rates of crime, incarceration and financial burdens, the amount of juvenile youth with a diagnosable mental health condition is also staggering. Approximately 1.4 million of the 2.4 million adolescents (65-70%) involved in the juvenile justice system meet criteria for a mental health disorder compared to 10-20% of the general adolescent population (Burke, Mulvey, & Schubert, 2015; Kapp et al., 2013). Mental health conditions of juvenile youth are estimated to be higher among those in residential or

detention facilities compared to individuals on probation (Burke et al., 2015). Kapp et al. (2013) asserts that about 60% of juvenile youth met criteria for three or more mental health diagnoses, with females (80%) being more likely than males (67%) to be provided a diagnosis. Furthermore, youth may have co-morbid mental health conditions with a substance use disorder (60.8%). According to Tossone et al. (2017), the most common diagnoses among juvenile youth include conduct disorder, oppositional defiant disorder, depression, alcohol related disorders, and post-traumatic stress disorder. Though adjudicated youth appear to have a significant need for mental health services, only six percent of youth are referred for psychological services and about 31% received mental health services annually (Kapp et al., 2013; Robst, Armstrong, & Dollard, 2017). Furthermore, in a probation setting, about one in three juvenile offenders on probation were identified by juvenile probation officers as needing referrals for access to mental health services (Ford, & Blaustein, 2013). With the number of individuals that are becoming incarcerated with mental health concerns, it is evident that the process for accessing services needs improvement.

Demonstrating the need for increased psychological services for incarcerated youth is profoundly important, particularly regarding susceptibility for multiple mental health diagnoses, due to high rates of juvenile youth that have been exposed to or experienced trauma. Juvenile youth are about eight times more likely to be exposed to trauma compared to adolescents in the community (Robst et al., 2017). According to Robst et al. (2017), one study indicated that 92.5% of juveniles in detention centers had at least one traumatic experience, with an average of 14.6 traumatic events. Comparatively, Stimmel, Cruise, Ford, and Weiss (2014) identified that the prevalence of juvenile youth that experience and witness traumatic events ranges from 45%-90%. Subsequently, posttraumatic stress disorder (PTSD) may be the second most frequent

occurring disorder among adjudicated youth (after conduct disorder) with rates of PTSD ranging from 3%-50%, with males being diagnosed at a rate of 3.7% and females at 6.7% respectively (Robst et al., 2017; Stimmel et al., 2014; Wilson et al., 2013). Throughout various studies, some juvenile youth had been exposed to six or more traumatic events that can include traumatic loss, an accident, illness, or disaster-related trauma, physical or sexual abuse, and family or community violence (Ford & Blaustein, 2013; Stimmel at al., 2014). According to Perkins, Calhoun, Glaser, and Kunemund (2016), incarcerated youth are more likely to be survivors of child maltreatment with rates of 59.8%-70%, compared to adolescents in the general population. As a result, emphasis on proper mental health treatment referrals and services, specifically for survivors of trauma and other co-morbid mental health conditions, is a viable necessity.

Clinical services offered in detention and community settings for juvenile youth vary from facility to facility (Tossone et al., 2017). While approximately 94% of juvenile detention centers have behavioral health treatment service opportunities, about 56% conduct full evaluations and 71% offer screenings for behavioral health (Tossone et al., 2017). Additionally, in juvenile correctional facilities, 74% of youth are screened for suicide, while 33-67% are screened for other wide-ranging mental health concerns (Swank & Gagnon, 2017). There is a need for measures that detect complex trauma symptoms in juvenile offenders, as well as other screenings for mental health conditions so clinicians can offer effective interventions (Ford, 2011; Sellbom, 2014). Further, identifying and treating mental health concerns early could effectively reduce recidivism, including future delinquency or other juvenile justice system involvement, as well as address any other unmet needs for increased access to mental health services (Burke et al., 2015). Enhancing assessment services for identifying mental health symptomology among juvenile offenders will aid in the provision of intervention services that

meet the needs of juvenile youth from a narrowed focus, particularly if an offender has had prior experience(s) of trauma.

ADOLESCENTS AND TRAUMA

Most juvenile youth have reportedly experienced a substantial amount of trauma compared to the generalized population of adolescents; however, this evidence does not indicate that the amount of trauma experienced by youth in the United States remains unrecognized. Among adolescents in the general population ages 13-17, approximately 62%- 80% had experienced or been exposed to at least one type of traumatic event, whilst 19% had experienced up to three or more types of trauma (Darnell et al., 2019; Wamser-Nanney, & Cherry, 2018). For children that are exposed to multiple types of trauma, about 64.5% experienced more than one type of trauma within one year. Of those, about 22% of children experienced four or more types of trauma and eight percent experienced about seven types of trauma (Wamser-Nanney, & Cherry, 2018). The most frequently occurring types of trauma for children and adolescents include physical assault (22-61%), sexual assault (5%-8%), witnessing domestic or community violence (10%), abuse (16%), neglect (10%), murder of a family member or friend (8%) and other experiences that could be associated with adverse psychological and physical health problems (Darnell et al., 2019; Ford, Chapman, Connor, & Cruise, 2012; Wamser-Nanney, & Cherry, 2018). After being exposed to or experiencing a traumatic event, roughly 25% of youth develop mental health symptoms that lead to negative outcomes because they are misdiagnosed or remain untreated (Selwyn, Schneider, Anderson, & Langhinrichsen-Rohling, 2019). Trauma is more common among children and adolescents than expected and while trauma responses vary, several negative consequences can occur if left untreated or unnoticed.

To reiterate, psychological trauma occurs from a response to an event that disrupts typical coping strategies in the body due to intense feelings of fear, helplessness, and horror (Soloman & Heide, 1999). The effects of trauma may remain outside of one's awareness, but they present immediately and can last several years after the event takes place. These effects can include reenactment of the experience through behavior, fearing specific stimuli associated with the trauma, having negative attitudes about life, and recurrent thoughts of a limited future (Soloman & Heide, 1999). Additionally, when individuals experience reminders of traumatic events, or "triggers," they may become activated, which increases their level of hyperarousal for awareness of physical sensations, thoughts, feelings, motivations, and actions (Borja and Callahan, 2009). According to Soloman and Heide (1999) there are three types of traumatic events. Type I trauma includes a memory of the experience; in some cases it may be difficult to understand how and what occurred and that the event can be defined as trauma. Type II trauma includes repeated exposure to events where some memory is retained, though often times denial, repression, dissociation, aggression toward the self, and identification with the perpetrator are methods used to cope (Soloman & Heide, 1999). Type III trauma is the result of multiple violent events that began at a young age and continued throughout development. The trauma can be from multiple perpetrators and may be frequent, unpredictable, forced, threatening, or involve repeated physical or sexual abuse by caregivers (Soloman & Heide, 1999). Responses to trauma and the types and the extent of trauma experienced differ between individuals, yet the effects of trauma remain detrimental if left unresolved.

If trauma is experienced throughout childhood or adolescence, development can be disrupted biologically and psychologically, especially if one has endured copious amounts of trauma (Darnell et al., 2019). Trauma reactions for adolescents can include either internalization

or externalization of symptoms. Internalization involves features of emotions that typically lead to symptoms of anxiety, depression, anhedonia, and withdrawal (Darnell et al., 2019). Externalization may include acts or symptoms of aggression, delinquency, oppositional defiant disorder, and conduct disorder. Externalizing symptoms can lead to recurrent trauma for adolescents that engage in risky behaviors, like substance use (Darnell et al., 2019). Additionally, previous assumptions from repeated forms of trauma suggested children become "desensitized" to trauma, however, complex trauma symptoms worsen outcomes for youth and can lead to impairments in functioning from emotional dysregulation related to trauma (Wamser-Nanney & Cherry, 2018). Further, Borja and Callahan (2009) asserted that individuals that experience trauma self-victimize, which suggests that one avoids or represses emotions, and may then develop low self-esteem, engage in self-destructive behaviors, and often blame themselves for the trauma that occurred. If individuals experience complex trauma, they may have predominantly internalizing symptoms, generalized behavioral difficulties, other trauma related symptoms, and clinical diagnoses (Wamser-Nanney & Cherry, 2018). With childhood trauma, individuals are at an increased risk of developing bipolar disorder, schizophrenia spectrum disorder, depressive disorder with psychotic features, PTSD, borderline personality disorder, substance abuse problems, suicidal ideations, health risk behavior, disease, and premature death as they develop into adulthood (Borja & Callahan, 2009; Choi, 2017; Darnell et al., 2019; Jowett et al., 2019; Selwyn et al., 2019). Other difficulties in adulthood that are related to PTSD include gastrointestinal problems, heart disease, obesity, and other physical health problems as a result of long-term unhealthy coping mechanisms to self-regulate emotions (Selwyn et al., 2019). The majority of people are resilient in the face of trauma and many children exposed to trauma have symptom relief after three months, though research indicates that one-fourth of all children need

assistance with trauma-related symptoms (Jowett et al., 2019; Selwyn et al., 2019). Trauma can lead to various types of symptomology, wherein proper assessment is supportive in addressing a developing child or adolescent's mental health needs to prevent physical and mental health difficulties in adulthood.

Darnell et al. (2019) found that each additional type of trauma that an adolescent reported experiencing was linked to an increase in participation of high-risk behaviors. These high-risk behaviors included being a victim of sexual exploitation, running away from home, engaging in criminal activity, having suicidal thoughts, engaging in self-injurious behaviors, increasing alcohol and substance abuse, and being truant (Darnell et al., 2019). Therefore, early detection of posttraumatic stress symptoms in youth is essential to reducing negative outcomes (Selwyn et al., 2019). However, trauma symptoms in youth often remain unrecognized or misdiagnosed as attention-deficit/hyperactivity disorder, oppositional defiant disorder, bipolar disorder. There are numerous concerning barriers for youth living in poverty, including accessibility of services, lack of access to transportation or providers, mental health stigma, family stress, or an under-identification of trauma symptoms by parents (Selwyn et al., 2019). Likewise, PTSD symptoms can also be overlooked by mental health clinicians or misidentified as a separate disorder that results in the treatment of inaccurate underlying symptoms. Treating inaccurate symptoms puts adolescents at risk for further victimization. Consequently, if detected early and assessed and treated appropriately, mental health symptom consequences, unhealthy coping strategies, and adverse physical health problems can be reduced (Selwyn et al., 2019).

Treatment for adolescents is key for addressing trauma symptomology, even if adolescents do not meet full diagnostic criteria for PTSD (Darnell et al., 2019). Strategies for treatment may involve empowering the client through enhancing self-esteem, teaching

containment strategies for distressing emotions, helping the client identify and express feelings in a healthy way, integrating the traumatic event with the self, and allowing the client to experience forgiveness (Soloman & Heide, 1999). There are many treatment options that may reduce trauma-related symptomology. Ultimately, trauma-informed clinicians working to assess and identify the correct disorder(s) will lead to improved mental health services, as well as reduce the likelihood of negative outcomes for youth.

JUVENILE YOUTH AND TRAUMA

As demonstrated, the majority of delinquent youth have experienced some type of trauma, but how does trauma impact engagement in criminal activity? Victimization throughout one's upbringing is a risk factor for delinquency (Rapp, 2016). For example, childhood physical abuse and other types of maltreatment are associated with higher incidences of total, violent, and property offending (Baglivio & Epps, 2016). Additionally, childhood abuse is linked to a high level of arrest rates (up to 53%) and involvement in Child Protective Services and foster care increase risks of delinquency (Baglivio & Epps, 2016; Rapp, 2016). Adjudicated youth have frequently been polyvictimized, are more likely to be revictimized, and they may also reside in neighborhoods filled with violence, crime, poverty, and loss (Ford et al., 2012; Rapp, 2016). Many juvenile youth have been threatened with a weapon (58%), were physically assaulted 35%, or experienced a traumatic loss (48%) (Ford et al., 2012). As a result, juvenile youth that have experienced trauma have a higher likelihood of responding to threats quickly and harshly compared to youth who do not have a trauma history (Pickens, 2016).

Polyvictimization, also known as complex trauma, is an exposure to traumatic stressor(s) that impacts a secure attachment with primary caregivers and the ability to regulate emotions effectively (Ford et al., 2012; Rapp, 2016). According to Ford et al. (2012), complex trauma can

disrupt the development of attention and learning, sensorimotor functions, short-term memory, verbal and autobiographical memory, and attachment to others in relationships. Consequently, youth with a complex trauma history display aggressive behavior more frequently, including episodes of rage, assault, or other destructive acts (Ford et al., 2012; Fox, Perez, Cass, Baglivio, & Epps, 2015). Aggression is one reaction that stems from trauma, though other origins of aggression exist. Aggressive acts are not always callous and actually may be a proactive way of defending oneself with acts of harm or control through physical or relational aggression (Ford et al., 2012). Youth may feel extremely vulnerable or unsafe and as a result carry weapons, join a gang, or react aggressively to threats after experiencing trauma (Pickens, 2016). Accordingly, juvenile offenders with a trauma background are associated with higher rates of serious crimes in adulthood and are 200% more likely to engage in violent behavior(s) and serious and repeated offending compared to those that did not experience abuse or neglect, even after controlling for gender, ethnicity, socioeconomic status, and family structure (Fox et al.,2015). Further, youth that have experienced several types of trauma are at an increased risk for substance use, violent or impulsive behaviors, negative social influences, and other high-risk activities (Ford & Blaustein, 2013). Children that have experienced abuse and neglect are more likely to commit a violent act compared to individuals that did not report abuse or neglect in their history (Fox et al., 2015). Early onset offenders of crime are more likely to engage in chronic offending compared to individuals that engage in delinquent behaviors during late adolescence. Likewise, adjudicated youth that commit crime during late adolescence are less likely to commit serious/violent offenses (Fox et al., 2013). Trauma and complex trauma have been associated with an increased likelihood of criminal behavior due to an increase in aggression, dysregulated

emotions, and fear of safety. If trauma is chronic over a long period of time, the likelihood of engaging in criminal activity early and committing violent offenses overtime also increases.

If trauma remains untreated, emotional responses can manifest into personality traits such as callousness or unemotional characteristics that are often linked to criminality. Callous traits are associated with aggression and long-term offending, however, exposure to violence is not a prerequisite for violence perpetration (Cruise & Ford, 2011). Anger difficulties as a result of violence exposure are related to higher rates of violent offending in the community (Cruise & Ford, 2011). Also connected to violence exposure among juvenile youth are traits of psychopathy (Tsang, 2018). Psychopathy includes maladaptive traits like grandiosity, lack of remorse, callousness, and superficial charm and is associated with antisocial and violent behaviors, predominantly among male juvenile offenders (Tsang, 2018). Adjudicated youth with psychopathic traits offend more frequently, and as exposure to violence increases, the engagement in illegal activities increases as well. Exposure to violence has been correlated to social deviance characteristics more frequently than interpersonal or affective features of psychopathy (Tsang, 2018). Therefore, understanding trauma symptomology will attempt to address underlying causes of offending behavior that can include psychopathology (Pickens, 2016). However, youth in juvenile justice settings are not always surrounded by individuals trained in trauma-informed care.

The high rate of incarcerated youth who report traumatic experiences highlight the importance of appropriately assessing and treating symptomology. If not assessed adequately and if symptoms go untreated, incarcerated youth are at-risk of re-traumatization from staff that are uninformed of methods to address trauma-related behavioral responses (Pickens, 2016). While in detention centers, juvenile youth can become triggered by invasive or coercive events such as

strip-searches or pat-downs, placement in facilities with limited access to loved ones, and use of seclusion or physical restraint (Branson et al., 2017). Additionally, these practices may worsen psychological distress for detained youth and lead to problematic legal outcomes (Branson et al., 2017). If one has experienced trauma while incarcerated, an individual may experience heightened arousal, avoid trauma reminders, keep to their self, and respond to threats with aggressive behavior in order to feel secure and protected (Pickens, 2016).

Dysregulated emotional systems that have been impacted by trauma, place youth on constant alert that make it difficult for one to inhibit impulsive behavior, concentrate, and make decisions. With trauma informed care in juvenile justice systems, improved interventions for assisting youth in distress can promote healthier coping abilities from detained youth (Pickens, 2016). Trauma informed care integrates the understanding of trauma and potential interventions in order to improve organizational structures by fostering a sense of safety (Branson et al., 2017). However, many staff members that are in contact with youth do not know each individual youth's background and staff receive limited training for responding appropriately to youth that have experienced trauma or have a mental health disorder (Ford & Blaustein, 2013). After assessing youth for trauma accurately, informing staff of potential symptoms and interventions can reduce potential for re-traumatization while youth are incarcerated.

Gender

Differences exist between male and female juvenile offenders that have experienced trauma, in addition to those who have not experienced trauma. Cahoun (2001) was one of the first to examine differences between male and female juveniles regarding mental health symptoms, as well as, treatment needs. Calhoun (2001) asserted that female delinquency was linked to challenges in family, school, and peer relationships, in addition to depressive and

anxiety symptoms, while the focus on male youth was determined by behavioral difficulties stemming from anger. In her preliminary study to determine underlying causes of delinquent behavior, Calhoun (2001) found that female juvenile youth are more likely to experience distress related to locus of control, social stress, anxiety, depression, relationships with parents, and self-esteem. Connelly, Glaser, & Calhoun (2019) also indicated that female juvenile youth report more difficulties with interpersonal relationships when compared to males. As such, determining differences between gender identities, particularly for adolescents that experience trauma is important to assess and treat underlying symptoms of delinquent behavior.

In regard specifically to trauma history, male and female juvenile youth differ in terms of trauma type experienced, their response to trauma, and likelihood of offense. Research indicates that females report more incidences of sexual assault and abuse, interpersonal victimization, and domestic violence (Baglivio & Epps, 2016; Wamser-Nanney & Cherry, 2018; Wasserman & McReynolds, 2011). Such traumatic experiences, especially from females that lived in violent homes, may lead to an increased opportunity to be truant, sexually promiscuous, run from home, or engage in substance use (Espinosa et al., 2013). Males report experiencing incidences of witnessing violence, such as someone getting severely injured, killed, or threatened with a weapon, fighting, natural disasters, motor vehicle accidents, and other accidents (Baglivio & Epps, 2016; Wamser-Nanney & Cherry, 2018; Wasserman & McReynolds, 2011). While males report some type of assault, females are 10 times more likely to be forced into sexual activity and about two times more likely to meet criteria for PTSD (Wasserman & McReynolds, 2011). Male sexual assault victims are more likely to have multiple perpetrators and to be beaten during forced sexual activity (Wasserman & McReynolds, 2011). Additionally, females are twice as likely to report physical abuse, and the abuser is most often the sibling or mother (Espinosa et al.,

2013). Other gender differences for trauma symptomology include that men are more likely to engage in violent behavior, delinquency, substance use, or have higher levels of aggression (externalizing symptoms), while women are more likely to suppress aggression and experience anxiety, depression, somatic complaints, intrusive thoughts, hyperarousal, sexual anxiety, dissociation, or perceive the world as a dangerous place (internalizing symptoms) (Baglivio & Epps, 2016; Espinosa et al., 2013; Wamser-Nanney & Cherry, 2018). Males that experience depressive symptoms have a higher likelihood of engaging in delinquent acts compared to males that have not; similar patterns were not found among females (Wylie & Rufino, 2018). According to Espinosa et al. (2013), boys are more likely to be diagnosed with attention-deficit/hyperactivity disorder, oppositional defiant disorder, and conduct disorder, while girls are likely to be diagnosed with depression, bipolar, anxiety, post-traumatic stress, and other mood disorders. Females are considered to either develop more trauma-related symptoms compared to men or report the symptoms more often than men, which could be driven by differences in gender roles and socialization (Wamser-Nanney & Cherry, 2018). Additionally, women are more likely to seek support from family or friends to experience relief from trauma-related symptoms; however, they are then more vulnerable to receiving negative social support or lack of belief or validation from descriptions of traumatic experiences (Wamser-Nanney & Cherry, 2018).

While female youth are more likely to experience multiple types of trauma, incarcerated male adolescents are more likely to experience symptoms of antisocial personality disorder, histrionic personality disorder, narcissistic personality disorder, and borderline personality disorder (Baglivio & Epps, 2016; Seveke, Franke, Kosson, & Krischer, 2016). Differences in psychopathy for gender vary among dimensions of interpersonal, affective, lifestyle, and antisocial features. For example, lifestyle and antisocial dimensions of psychopathy in girls are

related to difficulties in regulating emotions (Seveke et al., 2016). Likewise, family related variables strongly influence an adolescent female's development of psychopathy as opposed to trauma. For both genders, emotional dysregulation and physical traumatization are related to psychopathy symptoms for juvenile youth. Symptoms include extreme negative affect, impulsivity, reactive anger, aggression, violence, substance use, trauma, and suicidal behavior that is consistent with borderline personality disorder (Seveke et al., 2016). Since there are a multitude of differences found in trauma symptomology between adolescent females and males, previous research has suggested there are gender specific mental health assessments, interventions, and treatments (Grande et al., 2012).

One study by, Perkins, Calhoun, and Glaser (2014) explored gender and trauma differences in juvenile youth using the Behavior Assessment System for Children, Second Edition Self-Report of Personality for Adolescents (BASC-2 SRP-A) and the Child Report of Post-traumatic Symptoms (CROPS). Among juvenile offenders, females reported more trauma symptoms than males on both the BASC-2 SRP-A and CROPS. However, scores on the BASC-2 SRP-A did not fall in the clinically significant range for juvenile youth that reported experiencing trauma, but were indicated as experiencing a higher intensity of mental health symptoms when compared to the CROPS' scores that did indicate significance for trauma symptoms (Perkins et al., 2014). This suggest traumas specific measures are more useful when identifying symptoms. On the BASC-2 SRP-A, females scored higher than males on subscales of Anxiety and Somatization without dependence on trauma history (Perkins et al., 2014). In summary, trauma symptomology appears to manifest differently between males and females depending on the type and amount of trauma experienced. In addition, female offenders are also more likely to report experiencing distress when compared to male offenders. While most

psychological instruments provide male and female variants, this research aims to determine differences among male and female juvenile offenders for trauma symptomology.

Criminal Behavior, Culture, and Recidivism

Since most juvenile offenders have experienced trauma, it may be worthwhile to identify risk factors of crime and typical offense types for adolescents that have a reported trauma history. For example, both male and female adolescents were more likely to be detained for status offenses as compared to violent offenses (Espinosa et al., 2013). Additionally, about 40% of the juvenile detention population includes violations of a court order, which mostly occurs with female offenders, and females are also more often detained for status offenses (Espinosa et al., 2013). One offense type that was linked to all criminal careers was adolescent drug use, though it is seen as a less serious offense, and property related crime onset is predictive of long-term criminality as well (DeLisi, Angton, Behnken, & Kusow, 2015). Risk factors related to crime include having antisocial personality traits, antisocial behavior, antisocial thoughts, antisocial peers, family difficulties, education/employment, leisure/recreation, and substance abuse (Scott & Brown, 2018). Though offense type may vary, evaluating adjudicated youth after their first offense may deter subsequent potential crimes.

Another factor to consider in addition to offense type is systemic bias within the juvenile justice system. Juvenile youth of color from low-income backgrounds experience more frequent and tougher interactions with the justice system compared to whites (Pickens, 2016). The incarceration of minority youth reinforces stigma and cultural trauma that make youth susceptible to violent death and illness (Ford et al., 2012). Even with lower crime rates for youth, African American youth are two times more likely to be arrested compared to White youth (Leiber & Fix, 2019). Further, African American youth are more likely to report a history of

abuse/neglect, or any one type of adverse childhood experiences (ACEs), while White youth report exposure to trauma in four or more ACEs (Baglivio & Epps, 2016; Wylie & Rufino, 2018). ACEs include childhood physical, emotional, or sexual abuse, physical or emotional neglect, or family difficulties (Baglivio & Epps, 2016). Family issues include violence, substance use, mental illness, separation/divorce, or incarceration. Additionally, though immigrants are likely to live in low-income areas and are at increased risks for delinquency, they are less likely to offend in the community (Baglivio & Epps, 2016). With a higher likelihood of exposure to trauma, in addition to cultural trauma, related mental health effects of adolescents of color may potentially be worse in comparison to their White counterparts. Therefore, this evidence reinforces the need for improved assessment and treatment services throughout the juvenile justice system.

Another primary question to consider regarding incarcerated populations is how to reduce recidivism. As evidenced by several cases, youth that are not adequately rehabilitated consequently reoffend in the future. Specifically, Tossone et al. (2017) reported that youth with depression or anger symptoms are more likely to recidivate compared to individuals with low or high trauma symptoms. In contrast, adjudicated youth with a large number of adverse childhood experiences have recidivated soon after release (Wylie & Rufino, 2018). For females, sexual abuse in childhood has been found to be the strongest predictor of recidivism. Substance use disorders, disruptive behaviors, conduct problems, stress, and anxiety are all related to increased risks of recidivism (Wylie & Rufino, 2018). Although, it has been theorized that mood disorders can be a protective factor in recidivism because juvenile offenders with depression may experience loss of interest and lack energy, which means they are not as likely to engage socially or participate in risky activity (Wylie & Rufino, 2018). In one study that examined outcomes of

juvenile offenders who participated in residential treatment, results indicated recidivism rates between about 40% to 85%, where offenders in a psychopathy group recidivated at a rate of 48.6%, an impulsive group tended to recidivate at 42.2%, and the anxious/inhibited group was least likely to recidivate (Calley, 2012). Other factors linked to recidivism include being male, amount and type of victimization history, age, and any special education needs (Calley, 2012). Aside from incarceration or residential treatment, other options for juvenile youth with mental health needs include being placed in foster care for improved outcomes (Robst et al., 2017). Juvenile youth housed in residential facilities are likely to become affected by other delinquent peers and potentially recidivate (Robst et al., 2017). In one study, recidivism rates were lower following an arrest with outpatient treatment, such as individuals who were exposed to severe trauma and received mental health treatment while in foster care. These data suggests that mental health assessment and treatment have positive effects in reducing the likelihood of reoffending, without the need for long-term incarceration (Robst et al., 2017). With early intervention for juvenile youth that have experienced trauma, resilience can be promoted, and future justice involvement can be reduced (Wylie & Rufino, 2018). While the future of behavior is unpredictable, utilizing proper resources and tools while incarcerated or on probation has shown to be effective in assisting youth that have been exposed to trauma and have unmet mental health needs.

ASSESSMENT

As illustrated, the psychological assessment of juvenile youth is a crucial part of the treatment process in order to properly identify and treat mental health symptomology, especially if youth have experienced trauma. Increased screenings and assessments will provide trauma informed treatment and reduce the likelihood of re-offending (Butcher, Kretschmar, Singer, &

Flannery, 2015; Heaton, 2018). Specifically, if youth are provided adequate psychological screenings and treatment services when they are in custody and after they are released, their emotional symptomology can be reduced, thus improving their overall well-being long-term (Heaton, 2018). Further, youth in juvenile residential facilities may react aggressively due to self-defense mechanisms as a result of trauma and assessing for trauma history, and symptoms can reduce these negative reaction styles to stress by treating underlying constructs that are causing the behavior (Ford et al., 2012). However, some adolescents do not have the opportunity to engage in psychological treatment within the probation time period due to a lack of timely services being that it may take weeks or months to begin the treatment process (Kapp et al., 2013). The youth's immediate crisis may be over by then, and receiving treatment while on probation is no longer an option due to the delay (Kapp et al., 2013). Additionally, unless already documented, many forensic counselors/psychologists do not assess for trauma (Perkins et al., 2016). For example, it is frequently seen that juvenile youth files vary, and severely traumatized children may not have formal documentation of prior experiences, such as Child Protective Services records included in their file (Dargis et al., 2018). Though, with or without documentation, the research indicates victims of childhood trauma are overrepresented in incarcerated populations, suggesting that the assessment of trauma should be a standardized practice among delinquent youth (Dargis et al., 2018). Assessment and treatment of youth that are incarcerated or on probation is imperative, though increasing the use of trauma assessment in a timely manner remain barriers for access to services.

In addition to the obstacles that exist regarding access to mental health services, when clinicians assess for trauma among juvenile youth, other problems can arise. Dargis et al. (2018) and Ford et al. (2012) documented that individuals tend to underreport experiences of trauma due

to defensiveness, particularly when in a detention setting that can already be stressful. Events that are underreported include physical or sexual abuse, family or community violence, suicidality, or other externalizing symptoms (Ford et al., 2012). On the contrary, individuals may also overreport trauma symptoms due to cognitive distortions that fluctuate as health worsens or improves (Franklin & Thompson, 2005). In detention settings, clinicians often rely on self-report measures of childhood trauma which can lead to inaccurate identification of trauma-related symptoms (Dargis et al., 2018). Though clinician-rated measures of trauma using self-report and records would provide helpful information regarding psychopathology, they have yet to be developed or used in correctional settings (Dargis et al., 2018). When assessing for trauma, clinicians may need to verify report of traumatic events, use psychological self-report instruments with adequate psychometric qualities, and integrate collateral findings from assessment of symptoms (Franklin & Thompson, 2005). Clinicians may also want to be mindful of language used when interviewing clients in order to receive more credible responses (Ford et al., 2012). Language changes may include using brief and behaviorally specific questions without vague terms, such as ‘abuse’ (Ford et al., 2012). Specifically, for the treatment and assessment of male offenders or those with high levels of aggression, clinicians will want to screen for hyperarousal symptoms to reduce any need for reactive aggression that is often caused by complex trauma experiences so they can implement behavioral interventions (Stimmel et al., 2014). Assessing trauma symptomology in juvenile youth can be tedious, but awareness of the likelihood of under- or overreporting tendencies can be countered with clinician judgment and interview questioning style in juvenile settings.

Currently, there are many brief, yet comprehensive self-report measures used in detention settings for youth that inform treatment and assess for PTSD, such as the Traumatic Events

Screening Instrument (TESI), the Massachusetts Youth Screening Instrument–2 (MAYSI2) Traumatic Experiences (TE) subscale, or the Child Report of Posttraumatic Symptoms (CROPS) (Edner, Glaser, & Calhoun, 2017; Ford et al., 2012). Additionally, the Trauma Symptom Checklist for Children (TSCC) has been shown to have positive results, as well as, the UCLA PTSD Index and the Child Behavior Checklist (CBCL) (Broome, 2009; Butcher et al., 2015). However, one major difficulty in assessing trauma symptoms among children and adolescents is measuring internalizing symptoms due to the developmental process (Broome, 2009). Children are unable to communicate and express their thoughts and feelings due to limitations in verbal capacity, which can hinder the use of relying on self-report measures that are meant to analyze these constructs (Broome, 2009). Further, many clinicians may utilize behavioral measures like the Behavioral Assessment System for Children (BASC) Self-Report forms that may overlook specific symptoms related to posttraumatic stress in juvenile youth (Perkins et al., 2016). Though, symptoms on behavioral measures are evidenced to be related to trauma symptoms of juvenile youth including self-esteem, relational difficulties with parents, and interpersonal relationships that can guide future interventions (Connelly et al., 2019; Perkins et al., 2016). Moreover, several measures that assess for trauma-related or other mental health symptoms have not yet been evaluated with juvenile youth populations psychometrically or normed with clinical populations that are comparative to justice involved youth (Ford et al., 2012). Consequently, caution is advised when assessing for trauma history among adjudicated youth until research has advanced with recognition of psychometric properties for generalizability for incarcerated youth (Ford et al., 2012). Although there are several measures available for assessing trauma symptomology, developmental and psychometric difficulties for the juvenile offender population have led to limited availability for empirically supported psychological self-report assessments.

Another noteworthy factor when assessing juvenile youth, is the consideration of cultural factors. For numerous minority youth, mental health screenings facilitated by professionals may not be accurate due to stereotypic and stigmatizing views that may misidentify mental health needs of juvenile youth (Ford et al., 2012; Heaton, 2018). As stated, African American youth are overrepresented in the juvenile justice system and have a greater exposure to traumatic events compared to Non-Hispanic White youth (Ford et al., 2012; Heaton, 2018). Therefore, African American youth are more likely to experience trauma-related symptoms, as well as other mental health needs based on systemic issues (Heaton, 2018).

Often times, minority youth are provided mental health services for the first time due to their involvement in the legal system. Minority youth remain underserved in detainment, receiving fewer supportive services during and after detainment compared to White youth despite the fact that African American juvenile youth have the highest rates of mental health disorders. (Heaton, 2018; Zeola, Guina, & Nahhas, 2017). Traditional assessment methods for juvenile youth may also not be sufficient for minority youth due to differences in traumatic event experiences (de Arellano & Danielson, 2008). deArellano and Danielson (2008) suggest clinicians assess for the timeline of traumatic events, developmental issues, parental trauma history, political trauma, physiological problems, and safety of living environment. de Arellano and Danielson (2008) also suggest clinicians be knowledgeable of a family's preferred language, cultural beliefs, any immigration history, understanding of minority youth's race/ethnicity and establishing and maintaining trust when engaging in mental health treatment services with minority youth. Trauma informed care acknowledges the importance of screening for mental health concerns adequately while acknowledging and adhering to multicultural competencies with juvenile youth.

Limited referrals to mental health services have been linked to high recidivism rates with a shorter amount of time to recidivate, whereas increasing mental health referrals with improved assessment techniques allow opportunity to intervene and reduce future legal involvement (Zeola et al., 2017). With access to mental health services, individuals have shown reduced symptoms of psychopathology that are associated with criminality. Minimal recidivism rates have also resulted in the reduction of societal costs of criminal behavior, including harm to victims, perpetrators, and financial reductions for legal fees and incarceration (Zeola et al., 2017). In regard to the assessment and treatment of underlying causes of external behavior and symptomology among juvenile youth, they may experience less stress, shame, anger, and other negative emotions/behaviors (Zeola et al., 2017). However, prior to treating juvenile youth that have experienced trauma through counseling interventions, their symptoms must adequately be assessed with measures that have shown to be effective in correctional populations from culturally competent clinicians.

Personality Assessments for Juvenile Youth

One of the most widely used psychological instruments in the 1990s for measuring personality traits and psychopathology in adolescents was the *Minnesota Multiphasic Personality Inventory* (MMPI; Hathaway & McKinley, 1943; Handel, 2016). The MMPI was designed to be administered to clients ages 16 and older, although it was initially provided to younger adolescents. Adolescent specific norms for the MMPI were created prior to the development of the *Minnesota Multiphasic Personality Inventory for Adolescents* (MMPI-A; Butcher et al., 1992), which was similar to the *Minnesota Multiphasic Personality Inventory, Second Edition* (MMPI-2; Butcher et al., 1989; Handel, 2016). The MMPI-2 was created in 1989 to update

norms for ethnic, racial, and other clinical groups, and to expand clinical scales and items from the original MMPI (Butcher, Graham, & Ben-Porath, 1995).

The MMPI-2 was most often used in screening for psychological symptoms in correctional settings and included the use of Personality Psychopathology Five (PSY-5) scales (Sellbom, 2014; Zahn, Sellbom, Pymont, & Schenk, 2017). The PSY-5 scales include aggressiveness, disconstraint, negative emotionality/neuroticism, introversion/low positive emotionality, and psychoticism (Zahn, et al., 2017). Once the MMPI-A was developed, forensic psychologists frequently used the instrument to evaluate psychopathology in adolescents involved in the justice system (Archer, Buffington-Vollum, Stredny, & Handel, 2006). Research demonstrated the MMPI-A's usefulness in forensic populations for mean scale score differences between groups, classification accuracy, and discriminant validity for most scales, though interrater reliability was found to be low in some cases (Handel, Archer, Elkins, Mason, & Simonds-Bisbee, 2011).

Given the length of the MMPI-A and time required to complete a 478 item questionnaire, a short form of the MMPI-A had been created and included the first 150 items of the original MMPI-A with prorated scores that estimated values obtained from a full administration resulting in high scale correlations (Archer, Tirrell, & Elkins, 2001; Handel, 2016). However, the estimated values showed a lower congruency of profile patterns when compared to full versions (Archer et al., 2001). Therefore, authors sought development of the *Minnesota Multiphasic Personality Inventory–Adolescent-Restructured Form* (MMPI-A-RF; Archer, Handel, Ben-Porah, & Tellegen, 2016) in 2007 to shorten the MMPI-A version, add contemporary models of psychopathology and personality, and address many other limitations (Handel, 2016).

In constructing the MMPI-A-RF from the MMPI-A, the *Minnesota Multiphasic Personality Inventory–-Restructured Form, Second Edition* (MMPI-2-RF; Ben-Porath & Tellegen, 2008/2011) served as a guide as it was first modified from the MMPI-2 for several reasons (Handel, 2016). While the MMPI-A and MMPI-2 had similar strengths and limitations, goals for the MMPI-A-RF development included the creation of an adolescent measure of demoralization, distinctive clinical scales separate from demoralization, the addition of substantive scales, the alteration of validity scales to include over- and underreporting, as well as noncontent based responding, and the revision of PSY-5 scales (Handel, 2016). The creation of the MMPI-A-RF resulted in in 241 items with 48 new and revised scales to improve attention and concentration for adolescents. Though scale names in the MMPI-A-RF are shared with the MMPI-2-RF, exact items were not frequently included from the adult restructured form (Handel, 2016; Stokes, Pogge, & Archer, 2018).

Authors of the MMPI-A-RF also sought to produce scales with convergent and discriminant validity including Higher-Order (H-O) scales, Restructured Clinical (RC) scales, and Specific Problems (SP) scales (Handel, 2016; Stokes et al., 2018). The broadest scales in the MMPI-A-RF are the H-O scales, with the RC scales being midlevel, and SP scales having the narrowest type of measurement (Stokes et al., 2018). The addition of the demoralization scale is used to measure non-specific emotional distress, unhappiness and dissatisfaction, and is related to personality psychopathology measuring dysfunction across multiple domains (Zahn et al., 2017). Handel (2016) reports that administration time should vary between 20-45 minutes depending on administration type (e.g. by computer or with a booklet and answer sheet), which is significantly shorter to the MMPI-A completion time of 60 minutes (Butcher et al., 1992).

MMPI-A-RF validity scales were modified from the MMPI-A, as were the interpretive cutoff scores for scales Infrequent responses (F-r), Uncommon Virtues (L-r), Adjustment Validity (K-r), Variable Response Inconsistency-Revised (VRIN-r), True Response Inconsistency-Revised (TRIN-r), and Combined Response Inconsistency (CRIN) (Handel, 2016; Stokes et al., 2018). A Cannot Say raw score was also added to the MMPI-A-RF to count the number of omitted items or items answered both true and false (Handel, 2016). Further, interpretive cutoffs for clinical scales were lowered from T≥65 to T ≥60 (Stokes et al., 2018). Both the MMPI-A and MMPI-A-RF have been supported for use by the University of Minnesota Press and the restructured form should not be considered a replacement for the MMPI-A (Stokes et al., 2018). However, many experts continue to use the MMPI-2 for forensic assessment with the adult population as opposed to the MMPI-2-RF, as it is unclear whether the restructured form is admissible in court (Williams & Lally, 2017).

For adolescents, psychological assessments are often requested for court decisions for sentencing or dispositions, though research is still pending on which versions of the MMPI-A psychologists prefer to use in addition to which form demonstrates increased validity and reliability for incarcerated populations (Handel et al., 2011). There are various revisions and improvements from the development of the MMPI-A-RF from the MMPI-A, but research is still needed to show the MMPI-A-RF's efficacy, specifically for adjudicated youth.

One study by Stokes et al. (2018), has compared differences between the MMPI-A and MMPI-A-RF in adolescent psychiatric inpatients using archival data. Results indicated Somatic Complaints and Hypochondriasis scales, validity scales, and correlations between the PSY-5 scales are comparable between tests. The Demoralization scale accounts for 25% of the variance for scales Somatic Complaints, Low Positive Emotions, and Dysfunctional Negative Emotions

because it is related to low positive affect which is related to depressive and anxiety symptoms (Stokes et al., 2018). Demoralization scale elevations also indicate it is likely to identify commonalities among adolescents in need of psychological interventions. The MMPI-A-RF also showed approximately the same number of invalid protocols when compared to the MMPI-A, however, some results had fewer valid MMPI-A clinical scales. This evidence suggests the MMPI-A-RF is more likely to provide simplistic results with fewer elevations in scales (Stokes et al., 2018).

The MMPI-A-RF PSY-5 scales are now shorter in length, though Stokes et al. (2018) demonstrated they are measuring similar constructs. Authors of the MMPI-A-RF sought to eliminate item overlap from similar clinical features with more independent RC scales, and findings indicate the RC scales are significantly less intercorrelated than the MMPI-A clinical scales resulting in fewer scale elevations. H-O scales were found to relate to their MMPI-A counterparts and were also found to be independent of other clinical scales on the MMPI-A-RF (Stokes et al., 2018). Though validation research is limited, this study illustrates positive results among usefulness of the MMPI-A-RF and its comparability to the MMPI-A.

Similarly, in a second preliminary study, White et al. (2019) documented use of the Korean MMPI-A-RF and comparisons to the MMPI-A Substance Abuse (SUB) scale. In the Korean MMPI-A-RF, the SUB scale demonstrated superior internal consistency to that of the MMPI-A substance abuse scales and provided strong support for using the SUB scale when assessing substance abuse in Korean youth (White et al., 2019).

Minnesota Multiphasic Personality Inventory and Trauma

Some studies have identified elevated scales differences on versions of the MMPI for individuals that have experienced trauma. For example, predictors of childhood trauma were

associated with hostility, impulsivity, and social maladjustment from scales of Psychopathic Deviate (Pd), , Schizophrenia (Sc), Psychasthenia (Pt), and Lie (L) (Engels et al., 1994). For boys with complex trauma, clinically elevated scores were compared to a normative clinical sample and revealed there were significant differences among every scale with the exception of Social Alienation. Half of 13 participants had elevated scores for Lie, Infrequency, Paranoia, and Depression, and Schizophrenia (Osborne, 2012). Engels, Moisan, and Harris (1994) found that with the MMPI, histories of childhood sexual abuse in women resulted in elevated index scales of Infrequency (F), Correction (K), Depression (D), Schizophrenia (Sc), and Psychopathic Deviate (Pd), suggesting serious emotional disturbances.

For adolescents, previous studies have identified that multiple forms of trauma produce significant differences in clinical scales for the MMPI-A (Osborne, 2012). In an inpatient adolescent sample studying the validity of the supplementary PK scale measuring PTSD on the MMPI-A, findings showed significant relationships with PK scale elevations and emotional, sexual, and physical abuse (Pernod, 2010). Negative relationships with the PK scale and emotional and physical neglect were also found. The PK scale was significantly related to the Children's Trauma Questionnaire, the Trauma Content Index, and the depression and posttraumatic stress scales on the TSCC, though the PK scale had limited predictive utility (Pernod, 2010).

Among juvenile youth, the PK scale was moderately able to identify offenders with and without posttraumatic stress symptoms and showed differences among scales of Psychopathic Deviate, Paranoia, and Schizophrenia (Cashel, Ovaert, & Holliman, 2000). Other significant differences in clinical scales on the MMPI-A have also been found for Paranoia, Psychasthenia, Schizophrenia, Hypomania, and Social Introversion in adjudicated youth both with and without

trauma backgrounds (Edner et al., 2018; Edner, Kunemund, Glaser, & Calhoun, 2017). Additionally, the MMPI-A has shown moderate predictive utility for identifying juvenile offenders with and without a history of trauma, and has shown to be a useful measure in identifying trauma symptomology in juvenile youth (Edner et al., 2018).

Similarly, Murray et al. (2013) sought to identify a new clinical scale for the MMPI-A by observing differences in items for adjudicated youth with and without trauma histories. Seventeen items from the MMPI-A were identified among juvenile youth that could discriminate between trauma history including symptoms of anxiety, depression, physical complaints, anger, alienation, isolation, externalizing behavior, and mistrust with family members (Murray et al., 2013). While the MMPI-2-RF is used with adults, Sellbom, Lee, Ben-Porath, Arbisi, and Gervais (2012), found that demoralization was the most effective predictor of PTSD and internalizing Specific Problems scales also predicted PTSD symptoms in a forensic sample. These included intrusive ideation (nightmares), hypervigilance, anger proneness, and decreased social support (avoidance) (Sellbom et al., 2012). Overall, several studies have identified differences in MMPI clinical scales and items for trauma survivors, and among adolescents, the MMPI-A has shown to be effective in identifying differences for juvenile offenders that have experienced trauma when compared to those who have not.

Minnesota Multiphasic Personality Inventory–Adolescent-Restructured Form

The *Minnesota Multiphasic Personality Inventory–Adolescent-Restructured Form* (MMPI-A-RF; Archer et al., 2016) is a relatively new psychological instrument that has been adapted from its original version the *Minnesota Multiphasic Personality Inventory–Adolescent* (MMPI-A; Butcher et al., 1992). Historically, the MMPI-A has been widely used for research and clinical purposes for measuring personality functioning and psychopathology for individuals

between ages 14 and 18 (Handel et al., 2011). The MMPI-A is a 478 item true/false questionnaire that has shown test-retest reliability, internal consistency, construct validity, concurrent validity, convergent validity, and discriminant validity in juvenile offender populations (Archer, Bolinskey, Morton, & Farris, 2003; Butcher et al., 1992; Cashel, Rogers, Sewell, & Holliman, 1998; Handel et al., 2011; Megargee, & Brody, 1996; Morton, Farris, & Brenowitz, 2002; Peña, Toyer & Weed, 1998). Released in 2016, the MMPI-A-RF is a 241 item self-report inventory that also assesses for psychopathology and personality traits among adolescents between ages 14 and 18 (Archer et al., 2016; Handel, 2016).

Since the MMPI-A-RF has been recently released, literature has demonstrated minimal results regarding the strength of its reliability and validity within a generalizable population, and specifically with the juvenile offender population. However, Archer et al. (2016) indicated reliability evidence across substantive scales of personality and psychopathology, though some reliability estimates were low for Substantive Scales. Archer et al. (2016) illustrated that the standard error of measurement for scales with low estimates fell within the same range as other scales with higher reliability estimates and were therefore deemed acceptable due to the utility scores obtained from validity scales. Additionally, validation data for the MMPI-A-RF provided 17,136 convergent and discriminant validity coefficients to support construct validity for scale scores (Handel, 2016).

To evaluate construct validity of the MMPI-A-RF scale scores, Archer et al. (2016) utilized a normative sample, as well as four other independent archival samples for extra test data from acute psychiatric inpatient, residential treatment, and two forensic settings including predispositional and youth involved in the juvenile justice system (Handel, 2016). Extra test data included the Achenbach System of Empirically Based Assessment: Child-Behavior Checklist

(CBCL) and Youth Self-Report, a mental status exam, and the Disruptive Behavior Rating Scale (Handel, 2016). Although the MMPI-A-RF is new, its predecessor has been well-established in the psychological assessment community with regard to validity and reliability strengths. While more research is needed to provide efficacy for the MMPI-A-RF, this study aims to provide clinical contributions to the literature regarding the use of the MMPI-A-RF in juvenile offender populations—specifically for the assessment of trauma.

SUMMARY

Experiences of trauma are evidenced to occur among youth at an alarming rate. If untreated or misdiagnosed, trauma responses in youth can have negative effects in adulthood including several complications pertaining to physical and mental health. Youth—specifically males—who are exposed to trauma may externalize trauma-related symptoms resulting in risky or criminal behavior that lead to involvement in the juvenile justice system. If trauma-related symptoms remain unaddressed, juvenile youth are more likely to recidivate. As such, the need for widespread standardized trauma informed assessments and treatment are vital, not only to reduce crime and justice system related costs, but also to improve the long-term well-being of juvenile youth so that they can succeed and live healthy and productive lives as survivors of trauma.

CHAPTER III

METHOD

PARTICIPANTS

Participants included juvenile offenders as part of court-referred clinical services by the Georgia Department of Juvenile Justice. Data for the study was collected by doctoral and masters level students from juvenile offenders in the community and/or detention settings. Crimes against person(s), crimes against property, crimes against public order, drug charges, and status offenses were among the typical offenses committed by youth, per previous research in the Juvenile Counseling and Assessment Program (JCAP) (Edner, et al., 2017). Refer to Table 1 for demographic characteristics.

Table 1.

Demographic Characteristics	Frequency	Percentage
Gender		
Cisgender Females	63	20.5%
Cisgender Males	245	79.5%
Race/Ethnicity		
African American	179	58.1%
Anglo American	100	32.5%
Latina/o	23	7.5%
Asian American	4	1.3%
Multiracial	2	0.6%

A total of 308 participants, ages ranging from 14 to 17 years (M_{age} =15.32, *SD*=.838), were involved in the study (N = 308). The sample included more adolescent cisgender males (79.5%, N=245) compared to cisgender females (20.5%, N=63), and were predominantly self-identified as African American (58.1%, N=179). Remaining sample demographics consisted of

White participants (32.5%, N=100), Latino/a participants (7.5%, N=23), Asian American participants (1.3%, N=4), and Multiracial participants (0.6%, N=2) . Demographic information was self-reported through clinical interviews, court referral information, and delinquency history was provided by self-report and court records.

MATERIALS AND PROCEDURE

Measures

The *Minnesota Multiphasic Personality Inventory–Adolescent-Restructured Form* (MMPI-A-RF; Archer et al., 2016) has been adapted from its original version the *Minnesota Multiphasic Personality Inventory–Adolescent* (MMPI-A; Butcher et al., 1992). Psychopathology and personality constructs were assessed using the MMPI-A-RF, which was administered and completed at the time of services. Additionally, this study uses retrospective data and majority of participants completed the MMPI-A at the time of services, which were then converted to fit the MMPI-A-RF items and rescored.

Forensic psychologists had typically used the MMPI-A among juvenile youth for evaluations and the MMPI-A was the only objective instrument of personality among the top 10 instruments for this developmental range (Archer et al., 2006; Archer et al., 2016). The MMPI-A-RF was released in 2016 and is a 241-item adolescent self-report inventory that was developed to provide a comprehensive measure of adolescent psychopathology and personality in several areas of clinical and forensic settings for adolescents aged 14-18 (Archer et al., 2016; Handel, 2016). The MMPI-A RF items stem from the 478 true/false questions from the MMPI-A and the measure was shortened due to challenges of attention and concentration for youth. The MMPI-A RF also addressed heterogeneity concerns and includes the development of the demoralization scale, validity scales, restructured scales from the MMPI-A, additional substantive scales, and a

revision of the Personality Psychopathology Five (PSY-5) scales of the major dimensions of personality (Archer et al., 2016). The *Minnesota Multiphasic Personality Inventory, Second Edition, Restructured Form* (MMPI-2-RF) served as a template for the MMPI-A-RF and though they share similar scales, the MMPI-A-RF does not include the exact items that are reflected in the MMPI-2-RF for adults (Archer et al., 2016; Handel, 2016). Similar to the MMPI-2-RF, the MMPI-A-RF substantive scales include a three-tiered hierarchical structure, beginning with the Higher-Order (H-O) scales that measure overall psychological impairment in functioning. The Restructured Clinical (RC) scales serve as the mid-level, while the lowest level contains the Specific Problem (SP) scales measuring specific facets of the RC scales. Lastly, the revised PSY-5 scales measure personality related psychopathology to identify relationships between clinical content of the MMPI-A-RF (Archer et al., 2016; Handel, 2016).

The MMPI-A-RF normative sample included 15, 128 adolescents (9, 286 boys) and (5, 842 girls) from a variety of settings including psychiatric inpatient and outpatient, correctional, and school settings (Archer et al., 2016). The instrument was stratified by ethnicity, gender, geographic locations, parental occupations, and parent education level (Handel, 2016). Further, the MMPI-A-RF manual by Archer et al. (2016) provides evidence of reliability across substantive scales of personality and psychopathology, though, some reliability estimates were low for the substantive scales. Archer et al. (2016) illustrated that the standard error of measurement for scales with low estimates fell within the same range as other scales with higher reliability estimates and therefore were deemed acceptable due to the utility scores obtained from validity scales. Validity scales that are included in the MMPI-A-RF are three measures of inconsistent responding (VRIN-r, TRIN-r, and CRIN), overreporting or infrequent responses (F-r), and uncommon virtues (L-r) and adjustment validity (K-r) for underreporting (Archer et al.,

2016). Validation data for the MMPI-A-RF provided 17,136 convergent and discriminant validity coefficients to support construct validity for scale scores (Handel, 2016). Since the MMPI-A-RF is a relatively new instrument, research is limited in the literature to recognize the strength of its reliability and validity effects in general populations. In juvenile offender populations only, literature has yet to produce results recognizing the strength of its reliability and validity effects for the MMPI-A-RF. Holler (2020) found that within an inpatient setting, Restructured Clinical (RC) scales, Demoralization (RCd), Low Positive Emotions (RC2), and Dysfunctional Negative Emotions (RC7) have adequate convergent validity, though measures of discriminant validity using therapist rating scales and self-report instruments have been inconsistent. In this same study, convergent and discriminant validity was only founded for RC2 depression variables (Holler, 2020). In a related study, Sharf (2020) discovered the construct validity of the RC scales is supported and RCd and Antisocial Behavior (RC4) scales have demonstrated strong convergent and discriminant validity. These data indicate the MMPI-A-RF can detect psychopathology between internalizing and externalizing symptoms. In a final study regarding validity, Sharf & Rogers (2019) found that internal consistencies of the RC scales varied from poor to excellent among youth in post-adjudication detention or a partial hospitalization setting receiving intensive outpatient psychological services. These differences were largely based upon the amount of scale items, with 10 or more indicating good scale homogeneity, similar to the MMPI-A. Scale RC9 consistently evidenced the lowest internal consistency among RC scales and does not meet the established threshold for adequate reliability. However, the RCd, RC4, Ideas of Persecution (RC6), and Aberrant Experiences (RC8) scales maintained consistent support for convergent and discriminant validity, while RC2 produced

moderate correlations, and Cynicism (RC3) demonstrated low convergent validity (Sharf & Rogers, (2019).

The MMPI-A-RF was selected for the study because of its emphasis on psychopathology and personality traits as a previously efficacious tool for assessing trauma symptomology with the MMPI-A as evidenced by Murray et al. (2013). Refer to Table 2 for MMPI-A-RF clinical scale descriptions.

Table 2.

Description of MMPI-A-RF Clinical Scales

Scale	Description
Higher-Order (H-O) Scales	
Emotional/Internalizing Dysfunction (EID)	Problems associated with mood and affect
Thought Dysfunction (THD)	Problems associated with disordered thinking
Behavioral/Externalizing Dysfunction (BXD)	Problems associated with undercontrolled behavior
Restructured Clinical (RC) Scales	
Demoralization (RCd)	General unhappiness and dissatisfaction
Somatic Complaints (RC1)	Diffuse physical health complaints
Low Positive Emotions (RC2)	A distinctive, core vulnerability factor in depression
Cynicism (RC3)	Non-self-referential beliefs that others are bad and not to be trusted
Antisocial Behavior (RC4)	Rule-breaking and irresponsible behavior
Ideas of Persecution (RC6)	Self-Referential beliefs that others pose a threat
Dysfunctional Negative Emotions (RC7)	Maladaptive anxiety, anger, and irritability
Aberrant Experiences (RC8)	Unusual perceptions or thoughts associated with psychosis
Hypomanic Activation (RC9)	Overactivation, aggression, impulsivity, and grandiosity
Specific Problems (SP) Scales	
Somatic/Cognitive Scales	
Malaise (MLS)	Overall sense of physical debilitation, poor health
Gastrointestinal Complaints (GIC)	Nausea, recurring upset stomach, and poor appetite
Head Pain Complaints (HPC)	Head and neck pain
Neurological Complaints (NUC)	Dizziness, weakness, paralysis, loss of balance, etc.
Cognitive Complaints (COG)	Memory problems, difficulties concentrating
Internalizing Scales	
Helplessness/Hopelessness (HLP)	Belief that goals cannot be reached or problems cannot be solved

Self-Doubt (SFD)	Lack of self-confidence, feelings of uselessness
Inefficacy (NFC)	Belief that one is indecisive and inefficacious
Obsessions/Compulsions (OCS)	Varied obsessional and compulsive behaviors
Stress/Worry (STW)	Preoccupation with disappointments, difficulty with time pressure
Anxiety (AXY)	Pervasive anxiety, frights, frequent nightmares
Anger Proneness (ANP)	Easily angered, impatient with others
Behavior-Restricting Fears (BRF)	Fears that significantly inhibit normal behavior
Specific Fears (SPF)	Multiple specific fears
Externalizing Scales	
Negative School Attitudes (NSA)	Negative attitudes and beliefs about school
Antisocial Attitudes (ASA)	Various antisocial beliefs and attitudes
Conduct Problems (CNP)	Difficulties at school and at home, stealing
Substance Abuse (SUB)	Current and past misuse of alcohol and drugs
Negative Peer Influence (NPI)	Affiliation with negative peer group
Aggression (AGG)	Physically aggressive, violent behavior
Interpersonal Scales	
Family Problems (FML)	Conflictual family relationships
Interpersonal Passivity (IPP)	Being unassertive and submissive
Social Avoidance (SAV)	Avoiding or not enjoying social events
Shyness (SHY)	Feeling uncomfortable and anxious around others
Disaffiliativeness (DSF)	Disliking people and being around them
Personality Psychopathology Five (PSY-5) Scales	
Aggressiveness-Revised (AGGR-r)	Instrumental, goal-directed aggression
Psychoticism-Revised (PSYC-r)	Disconnection from reality
Disconstraint-Revised (DISC-r)	Undercontrolled behavior
Negative Emotionality/ Neuroticism-Revised (NEGE-r)	Anxiety, insecurity, worry, and fear
Introversion/Low Positive Emotionality- Revised (INTR-r)	Social disengagement and anhedonia

Table 2 Excerpted from Archer et al., 2016

Procedure

Participants were mandated by the state of Georgia to receive psychological evaluation or counseling services following adjudication to be included in the study. Caregivers of all participants provided informed consent and adolescent assent were obtained to be included in this study for research purposes. JCAP graduate student clinicians provided psychological services. Clinical intake interviews and case notes were completed by master and doctoral level students, however, doctoral level students completed all psychological evaluations. All students

were trained in the test administration and supervised by licensed psychologists. Procedures for the study were approved by The Internal Review Board at the University of Georgia.

Participants were included in the study based on the following criteria: the MMPI-A-RF and/or the MMPI-A was completed during psychological assessments and if information was revealed about the presence or absence of traumatic experiences throughout clinical interviews, throughout the course of clinical services, or in records from the Georgia Department of Juvenile Justice System accessed by the Juvenile Tracking System (JTS). Participants aged 14-17 were included in the study. Participants ages 11-13 were excluded from the study per normative standards of the MMPI-A-RF, and participants aged 18 were also excluded due juvenile justice offender status. The MMPI-A data was converted to fit the MMPI-A-RF and all data was determined valid and accurate in order to be used in the study.

Evidence of traumatic experiences was determined through self-report from clients and parents or assessed per records in JTS. This study defined trauma as emotional reactions to events that typically threaten survival including injury, death, or the safety of the self and others (APA, 2008). As such, trauma categories included being exposed to and/or experiencing violent or stressful events such as physical or sexual abuse, physical and/or emotional neglect, experiences of loss/separation, witnessing domestic violence, and experiencing one or more of any of the trauma types listed. Discussed trauma types have previously been informed by literature per, Edner et al. (2017).

If participants disclosed past incidents of physical, emotional, and/or sexual abuse; neglect (also determined by deprivation charges by the Division of Family and Children Services); or witnessed acts of domestic and/or community violence, individuals were characterized in to a “trauma” category. If participants reported they did not have any of these

experiences, they were characterized in to a “no trauma” category. If participant information regarding these categories were not revealed in the data, they were excluded from the study. This study’s primary investigator classified whether an event was deemed traumatic versus non-traumatic and classified participants by their prospective categories. This characterization was crossed referenced with researchers (master-level research assistants), and then reexamined for inclusion.

Among the data, 133 (43.2%) adolescent participants reported to have experienced at least one previous traumatic event and 175 (56.8%) reported that they had not experienced a traumatic event. Of those with reported trauma history, fifty-seven participants reported experiencing multiple traumatic events (42.9%) while remaining and majority of participants, 76 adolescents (57.1%) reported experiencing only one type of traumatic event. All incidences of trauma as reported by participants involving singular and multiple types of trauma included a total of 64 adolescents with reported history of physical abuse (20.8%), 33 adolescents with reported history of sexual abuse/ assault (10.7%), 28 adolescents with reported history of physical or emotional neglect (9.1%), 63 adolescents had abruptly experienced the loss of a loved one (20.5%), and 24 adolescents reported a history of witnessing domestic violence (7.8%). For juvenile youth that reported only one type of trauma, included a total of 19 adolescents reported history of physical abuse only (6.2%), 12 adolescents reported history of sexual abuse/ assault only (3.9%), 11 adolescents reported history of physical or emotional neglect only (3.6%), 28 adolescents had abruptly experienced the loss of a loved one only (9.1%), and 6 adolescents reported a history of witnessing domestic violence (1.9%). Of the adolescents that endorsed experiencing trauma, 40 disclosed they had multiple victimizations of trauma (13%). Refer to Table 3 for trauma demographic characteristics.

Table 3.

Trauma Demographic Characteristics	Frequency	Percentage
Trauma History		
No Reported Trauma	175	56.8%
Reported Trauma	133	43.2%
Trauma Type Including Multiple and Singular Events		
Physical Abuse	64	20.1%
Sexual Abuse/Assault	33	10.7%
Neglect	28	9.1%
Grief and Loss	63	20.5%
Witnessed Domestic Violence	24	7.8%
Singular Reported Trauma by Type		
Physical Abuse Only	19	6.2%
Sexual Abuse/Assault Only	12	3.9%
Neglect Only	11	3.6%
Grief and Loss Only	28	9.1%
Witnessed Domestic Violence Only	6	1.9%
Multiple Traumas	57	42.9%
Single Event Traumas	76	57.1%
Multiple Victimizations Reported	40	13.0%

Comparisons between the participants in either the Trauma or Non-trauma groups were made in association with the completed MMPI-A RF profiles. Exclusion criteria was informed by MMPI-A-RF interpretation guidelines for profiles that were deemed invalid (Archer et al., 2016). In this study, participants that met the following criteria were excluded: MMPI-A-RF scores of Cannot Say (CNS) scale ≥10 (raw score), F-r T-score of ≥90, L-r T-Scores of ≥80, K-r T-scores of ≥75, VRIN-r, TRIN-r, and CRIN ≥75.

STATISTICAL ANALYSIS

Research Question 1: Are there differences between the MMPI-A-RF clinical scales among youth who endorsed experiences of trauma verses youth who did not report trauma history?

Both a two and one-way Multivariate Analysis of Variance (MANOVA) was used to evaluate mean differences in the MMPI-A-RF clinical scale scores between juvenile offenders that have experienced trauma versus offenders that have not experienced trauma and divided by H-O, RC, SP, and PSY-5 clinical scales. The two-way MANOVA was used to explore and identify multiple dependent variables of significance that could aid in determining the usefulness of the MMPI-A-RF for assessing trauma by treatment professionals for both male and female juvenile offender populations. The one-way MANOVA was used to enhance main effects from the dataset to identify relationships independently for gender and trauma groups. The two-way MANOVA was selected based on the amount of independent and dependent variables used.

Research Question 2: Are there gender differences in the identified MMPI-A-RF clinical scales for individuals that reported trauma history?

Both the two and one-way MANOVA was also used to determine mean differences in gender that exist across the MMPI-A-RF clinical scales and the presence of trauma and divided by H-O, RC, SP, and PSY-5 clinical scales. The two-way MANOVA used can provide exploratory data regarding the relationship between of the MMPI-A-RF clinical scales, trauma symptomology, and determine differences between male and female juvenile offenders. The one-way MANOVA was used to enhance main effects from the dataset to identify relationships independently for gender and trauma groups. The two-way MANOVA was selected based on the amount of independent and dependent variables used.

Research Question 3: Do the clinical scales on the MMPI-A-RF that were identified of significance for distinguishing juveniles that endorsed experiencing trauma, accurately predict juveniles who have a reported history of trauma?

A Hierarchical Binary Logistic Regression Analysis was used to determine predictability of adjudicated youth who have experienced trauma for clinically significant MMPI-A-RF clinical scales. Performing a Hierarchical Binary Logistic Regression Analysis was decided due to the format of the MMPI-A-RF, and divided by H-O, RC, SP, and PSY-5 clinical scales of significance for trauma. This analysis explored the relationship between self-report and accuracy of trauma identification among juvenile offenders. If the significant MMPI-A-RF clinical scales can correctly identify juvenile offenders that have experienced trauma, treatment professionals will be able to utilize the MMPI-A-RF as a trauma assessment tool for adjudicated youth, whether or not the youth discloses experiences of trauma.

Research Question 4: Are there differences between MMPI-A-RF item level responses within statistically significant and predictive clinical scales that identified juvenile offenders with a reported history of trauma versus juvenile offenders without trauma history?

A Stepwise Discriminant Analysis was used to determine mean differences in item level responses that exist across each of the clinically significant MMPI-A-RF clinical scales for trauma that were also predictors for the presence of trauma. Performing a Stepwise Discriminant Analysis for MMPI-A-RF predictive clinical scales can be useful to understand the particular items that were consistently endorsed by juvenile offenders to gain insight to trauma symptomology/experiences of juvenile youth in custody, as well as, to indicate appropriate treatment methods and further assessment of youth involved in the juvenile justice system.

Research Question 5: Do the item level responses within specific predictive clinical scales on the MMPI-A-RF that were identified of significance for distinguishing juveniles that endorsed experiencing trauma, accurately predict juveniles who have a reported history of trauma?

A Stepwise Discriminant Analysis was used to determine predictability of clinically significant item level responses among MMPI-A-RF predictive clinical scales among adjudicated youth who have experienced trauma. No other studies have identified usefulness of individual items relative to traumatic symptoms for juvenile offenders using the MMPI-A-RF. By predicting items that suggest trauma is likely to have occurred, initial exploratory data can be identified to determine if experiences of trauma need to be further examined by treating professionals or to ensure quality treatment of justice involved youth.

CHAPTER IV

RESULTS

DATA ANALYSIS

The Statistical Package for the Social Sciences (SPSS) was utilized for data storage and all statistical analyses. Data were screened for univariate/multivariate outliers using Mahalanobis distance and outlier participant scores were removed for the purposes of this study. Refer to Appendix, Tables A5-A10 for complete list of descriptive statistics.

ANALYSIS 1

To compare multiple groups, two-way MANOVA analyses were used to evaluate mean differences in the *Minnesota Multiphasic Personality Inventory–Adolescent-Restructured Form* (MMPI-A-RF) clinical scale scores between juvenile offenders that have experienced trauma versus offenders that have not experienced trauma. two-way MANOVA were also used to determine mean differences in gender that exist across the MMPI-A-RF clinical scales and the presence of trauma. Due to the structure of the MMPI-A-RF, two-way MANOVAs were completed separately beginning with the Higher-Order (H-O) scales, Restructured Clinical (RC) scales, Specific Problems (SP) Scales, and the Personality Psychopathology Five (PSY-5) scales. two-way MANOVA results were interpreted with 95% confidence. Observations were statistically independent since groups are made up of different people, however, results of assumption tests for multivariate normality and homogeneity of covariance matrices were difficult to satisfy for each dependent variable.

Evidence shows that when using statistical analyses to measure psychological constructs, assumptions of multivariate normality and homogeneity of covariance are not likely to be satisfied (Lix, Algina, & Keselman, 2003). Additionally, there is little effect on non-normality for F-tests, if the degrees of freedom for residual variance are not small (Glass, Peckham, & Sanders, 1972). Likewise, skewness and kurtosis are the most important indicators of non-normality that may influence inferences in Analysis of Variance. Moderate non-normality has shown no effect of importance on power, unless data are extremely skewed or leptokurtic (Glass et al., 1972). With all outliers in the sample removed, skewness and kurtosis in this sample appear to be within normal limits. Further, Finch (2005) stated most departures from normality have a minimal impact on the Type I error rate of MANOVA. Power can decline when variables are platykurtic or when samples are greatly unequal, but Pillai's trace has found to be most robust to utilize when there are violations to assumptions (Finch, 2005). Consequently, statistics continued to be calculated using MANOVA despite violated assumptions for multivariate normality.

Between independent variables of gender and prior trauma history, there was an unbalanced design since group sample sizes are different and the robustness of MANOVA cannot be assumed (Field et al., 2012). Group sizes for trauma categories and gender were both unequal; however, with the larger sample size, statistical significance can be trusted as greater variances and covariances were produced (Field et al., 2012). Since the multivariate normality assumption was not satisfied for each dependent variable and groups in the dataset differed along more than one variable, the Pillai-Bartlett trace was used to interpret results since it is the most powerful measure to use for MANOVA (Field et al., 2012).

H-O Clinical Scales

For the two-way MANOVA measuring H-O scales, the Box's Test of Equality of Covariance Matrices was significant, *Box's M* = 42.852, $p = .001$. Since the assumption of homogeneity of covariance uses $\alpha=.001$ as a criterion, matrices are assumed to be unequal and the null hypothesis cannot be rejected confidently. However, since Field, Miles, and Field (2012) report that Box's Test should be interpreted with caution because data can be non-significant when multivariate normality is not tenable, Levene Tests were also used to measure equality of error variances. For the Levene's test, the Thought Dysfunction (THD), $F(3, 304) = 1.012$, $p = .387$ and Behavioral/Externalizing Dysfunction (BXD), $F(3, 304) = 1.577$, $p = .195$, scales displayed non-significant outcomes with the Levene Test. However, the Emotional/Internalizing Dysfunction (EID) scale, $F(3, 304) = 4.423$, $p = .005$, indicated statistical significance suggesting variances could be unequal for these dependent variables. As a result, various logarithmic transformations were used to establish normality including the base-10 logarithm (log10), natural logarithm (ln), base-2 logarithm (log2), exponential logarithm (Exp), and square root transformation (SQRT). The log10 transformation was used for the purposes of this study due to minimal normality violations across H-O scales. Using log10 transformations for H-O scales, the Box's Test of Equality of Covariance Matrices was non-significant, *Box's M* = 33.071, $p = .022$. Using the Levene Test, EID, $F(3, 304) = 1.524$, $p = .208$, THD, $F(3, 304) = 0.287$, $p = 0.835$ and BXD, $F(3, 304) = 1.515$, $p = 0.211$, were also non-significant; therefore, the assumptions are satisfied and the null hypothesis can be rejected confidently. Refer to Appendix, Table A1-A4 for complete list of Levene Test results.

Results. With the significance level $\alpha=.05$, there was not a significant interaction

between gender and H-O clinical scales depending on the presence of trauma in adolescents, Pillai's Trace = .136, $F(3, 302) = .199^b$, $p > .05$, $\eta^2 = .136$. There was a significant main effect between gender and H-O clinical scales, Pillai's Trace = .069, $F(3, 302) = 7.458^b$, $p < .001$, $\eta^2 = .069$. There was no significant effect between the presence of trauma and H-O clinical scales, Pillai's Trace = .009, $F(3, 302) = .943^b$, $p > .05$, $\eta^2 = .009$. These findings indicate that for adjudicated youth, the gender of an individual has an impact on symptoms measured by H-O clinical scales, while the presence of trauma does not.

Since there was no significant interaction between gender and H-O clinical scales on the presence of trauma, the model was refitted with a one-way MANOVA for each independent variable. There was a statistically significant effect between the presence of trauma and H-O clinical scales, Pillai's Trace = .031, $F(3, 304) = 3.258^b$, $p < .05$, $\eta^2 = .031$. Using log10 transformations for each H-O scale, the Box's Test of Equality of Covariance Matrices was non-significant *Box's M* = 6.898, $p = .338$, when measuring the main effect between reported trauma and H-O clinical scales. Per the Levene test, the assumption of homogeneity of variance for all H-O factors was retained. There was also a statistically significant effect between gender and H-O clinical scales, Pillai's Trace = .084, $F(3, 304) = 9.307^b$, $p < .001$, $\eta^2 = .084$. Using log10 transformations for each H-O scale, the Box's Test of Equality of Covariance Matrices was non-significant *Box's M* = 16.634, $p = .012$, when measuring the main effect between gender and H-O clinical scales. For the Levene test, two of the H-O clinical scales were non-significant, EID, $F(1, 306) = 3.387$, $p = .067$, and THD, $F(1, 306) = ..240$, $p = .625$, while the BXD, $F(1, 306) = 3.936$, $p = .048$, scale was significant. This assumption was violated so variances could be unequal for these dependent variables. Despite the use of various logarithmic transformations, normality or homogeneity of covariance assumptions could not be satisfied for this effect.

Instead, descriptive statistics were used to determine if data satisfied the assumptions of multivariate normality for each dependent variable. Each appeared to be normally distributed as outliers were eliminated from this sample. Refer to Appendix, Table A7-A10 for Descriptive Statistics.

RC Clinical Scales

For the two-way MANOVA measuring RC scales, the Box's Test of Equality of Covariance Matrices was not significant, *Box's M* = 173.463, $p = .104$, and the null hypothesis can be rejected confidently. For the Levene's test, the Demoralization (RCd), $F(3, 304) = 3.459$, $p = .017$, Somatic Complaints (RC1), $F(3, 304) = 3.486$, $p = .016$, and Dysfunctional Negative Emotions (RC7), $F(3, 304) = 3.134$, $p = .026$ were significant, suggesting variances could be unequal for these dependent variables. Remaining RC scales satisfied assumptions of homogeneity of variance. Various logarithmic transformations were used to establish normality for RC Scales including log10, ln, log2, Exp, and SQRT. The log10 transformation was used for the purposes of this study due to minimal normality violations across RC scales. Using log10 transformations for RC scales, the Box's Test of Equality of Covariance Matrices was non-significant, *Box's M* = 150.640, $p = .470$. Using the Levene Test, all RC scales were non-significant, therefore the assumptions are satisfied and the null hypothesis can be rejected confidently. Refer to Appendix, Table A1-A4 for complete list of Levene Test results.

Results. There was not a significant interaction between gender and RC clinical scales depending on the presence of trauma in adolescents, Pillai's Trace = .037, $F(9, 298) = 1.269^{b}$, $p > .05$, $\eta^2 = .037$. There were two significant main effects. There was a statistically significant main effect between gender and RC clinical scales, Pillai's Trace = .132, $F(9, 298) = 4.990^{b}$, $p < .001$, $\eta^2 = .062$. There was also a statistically significant main effect between the presence of

trauma and RC clinical scales, Pillai's Trace = .062, $F(9, 298) = 2.191^b$, $p < .05$, $\eta^2 = .009$. These findings indicate that for adjudicated youth, the gender of an individual and the presence of trauma have an independent impact on symptoms measured by RC clinical scales.

Since there was no significant interaction between gender and RC clinical scales on the presence of trauma, the model was refitted with a one-way MANOVA for each independent variable without testing for the interaction. There was a statistically significant effect between the presence of trauma and RC clinical scales, Pillai's Trace = .078, $F(9, 298) = 2.783^b$, $p < .05$, $\eta^2 = .078$. Using log10 transformations for each RC scale, the Box's Test of Equality of Covariance Matrices was non-significant *Box's M* = 39.442, $p = .754$, when measuring the main effect between reported and RC clinical scales. For the Levene test, all RC clinical scales were non-significant, indicating assumptions of homogeneity were satisfied.

There was also a statistically significant effect between gender and RC clinical scales, Pillai's Trace = .137, $F(9, 298) = 5.252^b$, $p < .001$, $\eta^2 = .137$. Using log10 transformations for each RC scale, the Box's Test of Equality of Covariance Matrices was non-significant *Box's M* = 66.734, $p = .039$, when measuring the main effect between gender and RC clinical scales. For the Levene test, all RC clinical scales were non-significant, indicating assumptions of homogeneity were satisfied.

SP Scales

For the two-way MANOVA measuring SP scales, the Box's Test of Equality of Covariance Matrices was significant, *Box's M* = 971.816, $p < .001$, suggesting the null hypothesis cannot be rejected confidently. For the Levene's test, 11 of 25 SP scales indicated significance at $\alpha=.05$ suggesting variances could be unequal for these dependent variables. Remaining SP scales satisfied the assumptions. (Refer to Appendix, Table A1-A4 for complete

list of Levene Test results) Various logarithmic transformations were used to establish normality for SP Scales including log10, ln, log2, Exp, and SQRT. The log10 transformation was used for the purposes of this study due to minimal normality violations across SP scales. Using log10 transformations for SP scales, the Box's Test of Equality of Covariance Matrices was non-significant, *Box's M* = 878.231, p = .026. Using the Levene Test, five of 25 SP scales were significant, indicating variances could be unequal for these dependent variables. Remaining SP scales satisfied the assumptions. Since normality or homogeneity of covariance assumptions could not be satisfied for this effect, descriptive statistics were used to determine if data satisfied the assumptions of multivariate normality for each dependent variable. Each appeared to be normally distributed as outliers were eliminated from this sample. Refer to Appendix, Tables A7-A10 for descriptive statistics.

Results. There was not a significant interaction between gender and SP clinical scales depending on the presence of trauma in adolescents, Pillai's Trace = .084, $F(25, 280) = 1.033^b$, $p > .05$, $\eta^2 = .084$. There were two significant main effects. There was a statistically significant effect between gender and SP clinical scales, Pillai's Trace = .218, $F(25, 280) = 3.127^b$, $p < .001$, $\eta^2 = .218$. There was a significant MANOVA effect between the presence of trauma and SP clinical scales, Pillai's Trace = .152, $F(25, 280) = 2.013^b$, $p < .05$, $\eta^2 = .152$. These findings indicate that for adjudicated youth, the gender of an individual and the presence of trauma have an independent impact on symptoms measured by SP clinical scales.

Since there was no significant interaction between gender and SP clinical scales on the presence of trauma, the model was refitted with a one-way MANOVA for each independent variable without testing for the interaction. There was a statistically significant effect between the presence of trauma and SP clinical scales, Pillai's Trace = .181, $F(25, 280) = 2.488^b$, $p < .05$,

$\eta^2 = .181$. Using log10 transformations for each RC scale, the Box's Test of Equality of Covariance Matrices was non-significant *Box's M* = 373.206, *p* = .262, when measuring the main effect between reported trauma and SP clinical scales. For the Levene test, four of 25 SP clinical scales were significant, violating assumptions of homogeneity. Remaining SP scales satisfied the assumptions. Descriptive statistics were used to determine if data satisfied the assumptions of multivariate normality for each dependent variable. Each appeared to be normally distributed.

There was a significant main effect between gender and SP clinical scales, Pillai's Trace = .228, $F(25, 282) = 3.324^b$, $p < .001$, $\eta^2 = .228$. Using log10 transformations for each SP scale, the Box's Test of Equality of Covariance Matrices was non-significant *Box's M* = 457.179, *p* = .010, when measuring the main effect between gender and SP clinical scales. For the Levene test, four of 25 SP clinical scales were significant, while the remaining SP scales satisfied the assumptions. As a result, descriptive statistics were used to satisfy the assumptions of multivariate normality for each dependent variable and each appeared to be normally distributed.

PSY-5 Scales

For the two-way MANOVA measuring PSY-5 scales, the Box's Test of Equality of Covariance Matrices was significant, *Box's M* = 73.172, *p* = .012, suggesting the null hypothesis can be rejected confidently. For the Levene's test, Negative Emotionality/Neuroticism-Revised (NEGE-r), $F(3, 304) = 8.821$, $p = .000$, was significant, while remaining PSY-5 scales indicated non-significance. This suggests variances could be unequal for these dependent variables. Refer to Appendix 1,Table X for Levene's test results. Various logarithmic transformations were used to establish normality for PSY-5 scales including log10, ln, log2, Exp, and SQRT. The log10 transformation was used for the purposes of this study due to minimal normality violations across SP scales. Using log10 transformations for PSY-5 scales, the Box's Test of Equality of

Covariance Matrices was non-significant, *Box's M* = 53.683, p = .258. Using the Levene Test, NEGE_r $F(3, 304) = 4.626$, p = .004, remained the only significant scale of the PSY-5 scales suggesting unequal normality. Descriptive statistics were then used to determine if data satisfied the assumptions of multivariate normality for each dependent variable and each appear to be normally distributed. Refer to Appendix, Table A1-A4 for complete list of Levene Test results and refer to Appendix, Tables A7-A10 for descriptive statistics.

Results. There was not a significant interaction between gender and PSY-5 clinical scales depending on the presence of trauma in adolescents, Pillai's Trace = .018, $F(5, 300) = 1.100^b$, $p > .05$, $\eta^2 = .018$. There was one statistically significant main effect between gender and PSY-5 clinical scales, Pillai's Trace = .129, $F(5, 300) = 8.903^b$, $p < .001$, $\eta^2 = .129$. There was not a significant effect between the presence of trauma and PSY-5 clinical scales, Pillai's Trace = .034, $F(5, 300) = 2.127^b$, $p > .05$, $\eta^2 = .034$. These findings indicate that for adjudicated youth, the gender of an individual has an impact on symptoms measured by PSY-5 clinical scales, while the presence of trauma does not.

Since there was no significant interaction between gender and PSY-5 clinical scales on the presence of trauma, the model was refitted with a one-way MANOVA for each independent variable without testing for the interaction. There was a significant MANOVA effect between the presence of trauma and PSY-5 clinical scales, Pillai's Trace = .049, $F(5, 302) = 3.100^b$, $p < .05$, $\eta^2 = .049$. Using log10 transformations for each PSY-5 scale, the Box's Test of Equality of Covariance Matrices was non-significant *Box's M* = 15.749, p = .418, when measuring the main effect between reported trauma and PSY-5 clinical scales. For the Levene test, all PSY-5 scales were non-significant, therefore, the null hypothesis can be rejected confidently.

There was also a significant MANOVA effect between gender and PSY-5 clinical scales, Pillai's Trace = .129, $F(5, 302) = 8.924^{b}$, $p < .001$, $\eta^2 = .129$. Using log10 transformations for each PSY-5 scale, the Box's Test of Equality of Covariance Matrices was non-significant *Box's* $M = 17.838$, $p = .302$, when measuring the main effect between gender and PSY-5 clinical scales. For the Levene test, NEGE_r, $F(3, 306) = 11.932$, $p = .001$, was the only significant scale, while remaining PSY-5 scales were non-significant. This suggests normality is not evenly distributed, therefore, descriptive statistics were used to satisfy the assumptions of multivariate normality for each dependent variable and each appear to be normally distributed.

MMPI-A-RF Clinical Scales

The Between-Subjects Effects from each one-way MANOVA models described differences between individuals involved in the juvenile justice system who reported experiencing trauma compared to those who did not report experiencing trauma for mental health symptoms at the significance level α=.05. Between categorical variables, there were 19 significant differences between the MMPI-A-RF clinical scales for those who reported experiencing trauma. Of these significant differences for those who have experienced trauma, 18 MMPI-A-RF clinical scales produced small significant effects. One of the significant differences in MMPI-A-RF for those who have experienced trauma produced moderate effects, i.e. Malaise ($F(1, 306) = 19.914$, $p < .05$, $\eta^2 = .061$). This indicates that regardless of gender type, mental health symptoms from MMPI-A-RF clinical scales of significance are experienced differently among adjudicated youth who have experienced trauma. The findings are reported in Table 1. In addition, Figure 1 presents graphical depictions of differences in MMPI-A-RF results for juvenile youth who endorsed experiencing trauma and those who did not report experiencing trauma across mental health constructs.

Table 1.

Between Subjects Effects from One-Way MANOVA for MMPI-A-RF Clinical Scales Between Trauma and No Trauma Groups Among Juvenile Youth (log10)

MMPI-A-RF Clinical Scale	*F*	*df*1	*df2*	*p*-value	η^2
Emotional/Internalizing Dysfunction (EID)	8.787	1	306	0.003**	0.028
Thought Dysfunction (THD)	6.636	1	306	0.010*	0.021
Behavioral/Externalizing Dysfunction (BXD)	2.854	1	306	0.092	0.009
Demoralization (RCd)	7.000	1	306	0.009**	0.022
Somatic Complaints (RC1)	4.490	1	306	0.035*	0.014
Low Positive Emotions (RC2)	14.645	1	306	0.000***	0.046
Cynicism (RC3)	0.047	1	306	0.828	0.000
Antisocial Behavior (RC4)	1.443	1	306	0.231	0.005
Ideas of Persecution (RC6)	7.942	1	306	0.005**	0.025
Dysfunctional Negative Emotions (RC7)	5.520	1	306	0.019*	0.018
Aberrant Experiences (RC8)	0.428	1	306	0.514	0.001
Hypomanic Activation (RC9)	0.475	1	306	0.491	0.002
Malaise (MLS)	19.914	1	306	0.000***	0.061
Gastrointestinal Complaints (GIC)	0.746	1	306	0.388	0.002
Head Pain Complaints (HPC)	1.495	1	306	0.222	0.005
Neurological Complaints (NUC)	5.642	1	306	0.018*	0.018
Cognitive Complaints (COG)	11.062	1	306	0.001***	0.035
Helplessness/Hopelessness (HLP)	1.490	1	306	0.223	0.005
Self-Doubt (SFD)	4.065	1	306	0.045*	0.013
Inefficacy (NFC)	2.333	1	306	0.128	0.008
Obsessions/Compulsions (OCS)	6.463	1	306	0.012*	0.021
Stress/Worry (STW)	1.218	1	306	0.271	0.004
Anxiety (AXY)	3.267	1	306	0.072	0.011
Anger Proneness (ANP)	3.084	1	306	0.080	0.010
Behavior-Restricting Fears (BRF)	0.115	1	306	0.735	0.000
Specific Fears (SPF)	1.444	1	306	0.230	0.005
Negative School Attitudes (NSA)	8.282	1	306	0.004**	0.026
Antisocial Attitudes (ASA)	1.180	1	306	0.278	0.004
Conduct Problems (CNP)	7.748	1	306	0.006**	0.025
Substance Abuse (SUB)	0.180	1	306	0.672	0.001
Negative Peer Influence (NPI)	0.134	1	306	0.714	0.000
Aggression (AGG)	6.202	1	306	0.013*	0.020
Family Problems (FML)	10.497	1	306	0.001**	0.033
Interpersonal Passivity (IPP)	3.513	1	306	0.062	0.011
Social Avoidance (SAV)	2.990	1	306	0.085	0.010
Shyness (SHY)	8.089	1	306	0.005**	0.026
Disaffiliativeness (DSF)	0.669	1	306	0.414	0.002
Aggressiveness-Revised (AGGR-r)	7.235	1	306	0.008**	0.023
Psychoticism-Revised (PSYC-r)	1.152	1	306	0.284	0.004
Disconstraint-Revised (DISC-r)	2.464	1	306	0.117	0.008

Negative Emotionality/ Neuroticism-Revised (NEGE-r)	3.518	1	306	0.062	0.011
Introversion/Low Positive Emotionality-Revised (INTR-r)	9.017	1	306	0.003**	0.029

* = $p<.05$, ** = $p<.01$, *** = $p<.001$

The Between-Subjects Effects from the one-way MANOVA model described differences between males and females involved in the juvenile justice system and mental health symptoms at the significance level α=.05. With gender, there were 26 significant differences between the MMPI-A-RF clinical scales. Of these significant differences between gender of adjudicated youth, 19 MMPI-A-RF clinical scales produced small significant effects. Seven of the significant differences in MMPI-A-RF clinical scales between genders produced moderate effects, including Emotional/Internalizing Dysfunction ($F(1, 306) = 26.008$, $p < .05$, $\eta^2 = .078$), Dysfunctional Negative Emotions ($F(1, 306) = 33.435$, $p < .05$, $\eta^2 = .099$), Head Pain Complaints ($F(1, 306) = 20.948$, $p < .05$, $\eta^2 = .064$), Stress/Worry ($F(1, 306) = 19.459$, $p < .05$, $\eta^2 = .060$), Anger Proneness ($F(1, 306) = 28.126$, $p < .05$, $\eta^2 = .084$), Family Problems ($F(1, 306) = 33.189$, $p < .05$, $\eta^2 = .098$), and Negative Emotionality/ Neuroticism-Revised ($F(1, 306) = 31.067$, $p < .05$, $\eta^2 = .092$). This indicates that regardless of which individuals had experienced trauma, mental health symptoms across MMPI-A-RF clinical scales of significance are experienced differently among male and female adjudicated youth. The findings are reported in Table 2. In addition, Figure 2 presents graphical depictions of differences in MMPI-A-RF results for males and females across mental health constructs.

Table 2.

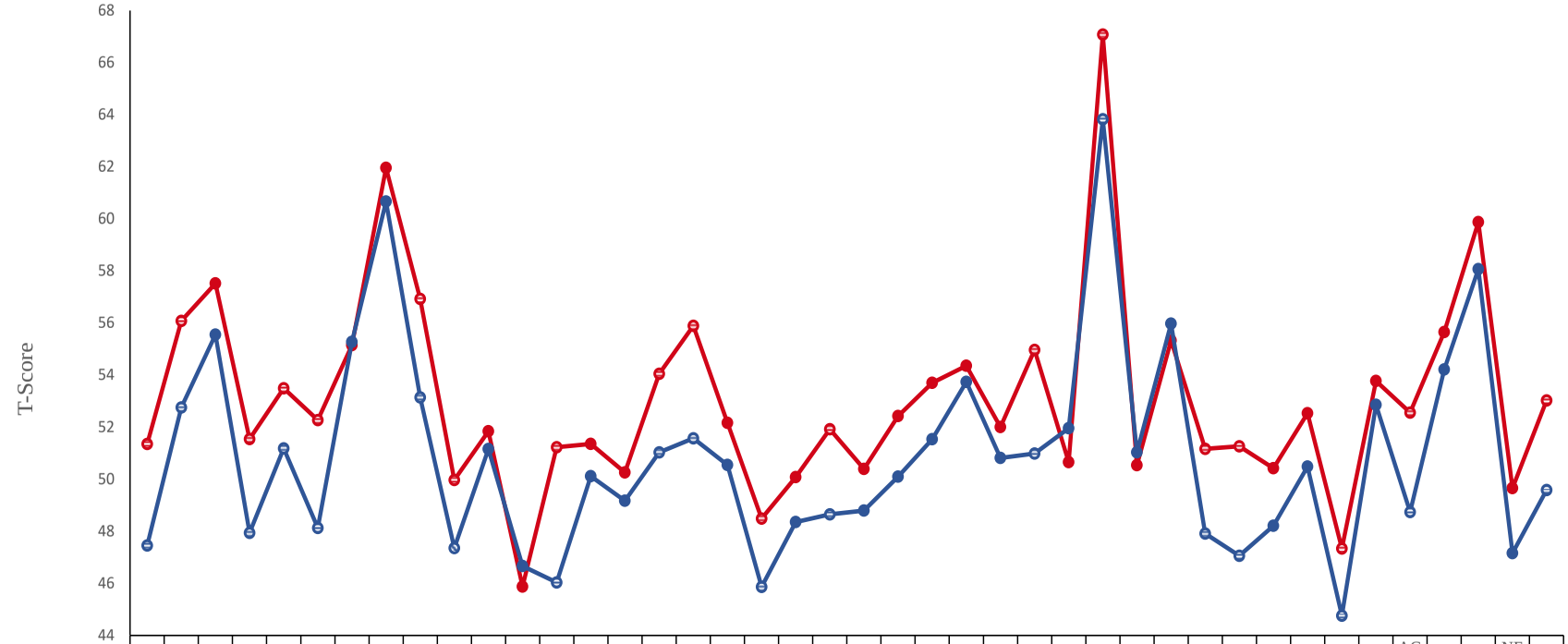
Between Subjects Effects from One-Way MANOVA for MMPI-A-RF Clinical Scales Between Male and Female Groups Among Juvenile Youth (log 10)

MMPI-A-RF Clinical Scale	*F*	*df*1	*df2*	*p*-value	η^2
Emotional/Internalizing Dysfunction (EID)	26.008	1	306	.000***	0.078
Thought Dysfunction (THD)	12.139	1	306	.001***	0.038
Behavioral/Externalizing Dysfunction (BXD)	1.320	1	306	0.251	0.004
Demoralization (RCd)	16.485	1	306	0.000***	0.051
Somatic Complaints (RC1)	18.017	1	306	0.000***	0.056
Low Positive Emotions (RC2)	0.202	1	306	0.653	0.001
Cynicism (RC3)	1.113	1	306	0.292	0.004
Antisocial Behavior (RC4)	0.687	1	306	0.408	0.002
Ideas of Persecution (RC6)	11.288	1	306	0.001***	0.036
Dysfunctional Negative Emotions (RC7)	33.435	1	306	0.000***	0.099
Aberrant Experiences (RC8)	3.587	1	306	0.059	0.012
Hypomanic Activation (RC9)	7.458	1	306	0.007**	0.024
Malaise (MLS)	13.761	1	306	0.000***	0.043
Gastrointestinal Complaints (GIC)	4.934	1	306	0.027*	0.016
Head Pain Complaints (HPC)	20.948	1	306	0.000***	0.064
Neurological Complaints (NUC)	4.258	1	306	0.040*	0.014
Cognitive Complaints (COG)	12.003	1	306	0.001***	0.038
Helplessness/Hopelessness (HLP)	5.720	1	306	0.017*	0.018
Self-Doubt (SFD)	15.330	1	306	0.000***	0.048
Inefficacy (NFC)	14.437	1	306	0.000***	0.045
Obsessions/Compulsions (OCS)	15.398	1	306	0.000***	0.048
Stress/Worry (STW)	19.459	1	306	0.000***	0.060
Anxiety (AXY)	12.661	1	306	0.000***	0.040
Anger Proneness (ANP)	28.126	1	306	0.000***	0.084
Behavior-Restricting Fears (BRF)	3.562	1	306	0.060	0.012
Specific Fears (SPF)	9.425	1	306	0.002**	0.030
Negative School Attitudes (NSA)	3.253	1	306	0.072	0.011
Antisocial Attitudes (ASA)	1.876	1	306	0.172	0.006
Conduct Problems (CNP)	1.041	1	306	0.309	0.003
Substance Abuse (SUB)	0.296	1	306	0.587	0.001
Negative Peer Influence (NPI)	0.139	1	306	0.710	0.000
Aggression (AGG)	4.994	1	306	0.026*	0.016
Family Problems (FML)	33.189	1	306	0.000***	0.098
Interpersonal Passivity (IPP)	0.133	1	306	0.716	0.000
Social Avoidance (SAV)	3.509	1	306	0.062	0.011
Shyness (SHY)	6.051	1	306	0.014*	0.019
Disaffiliativeness (DSF)	2.508	1	306	0.114	0.008
Aggressiveness-Revised (AGGR-r)	17.891	1	306	0.000***	0.055
Psychoticism-Revised (PSYC-r)	6.868	1	306	0.009**	0.022
Disconstraint-Revised (DISC-r)	0.540	1	306	0.463	0.002

Negative Emotionality/ Neuroticism-Revised (NEGE-r)	31.067	1	306	0.000***	0.092
Introversion/Low Positive Emotionality-Revised (INTR-r)	0.081	1	306	0.776	0.000

* = $p<.05$, ** = $p<.01$, *** = $p<.001$

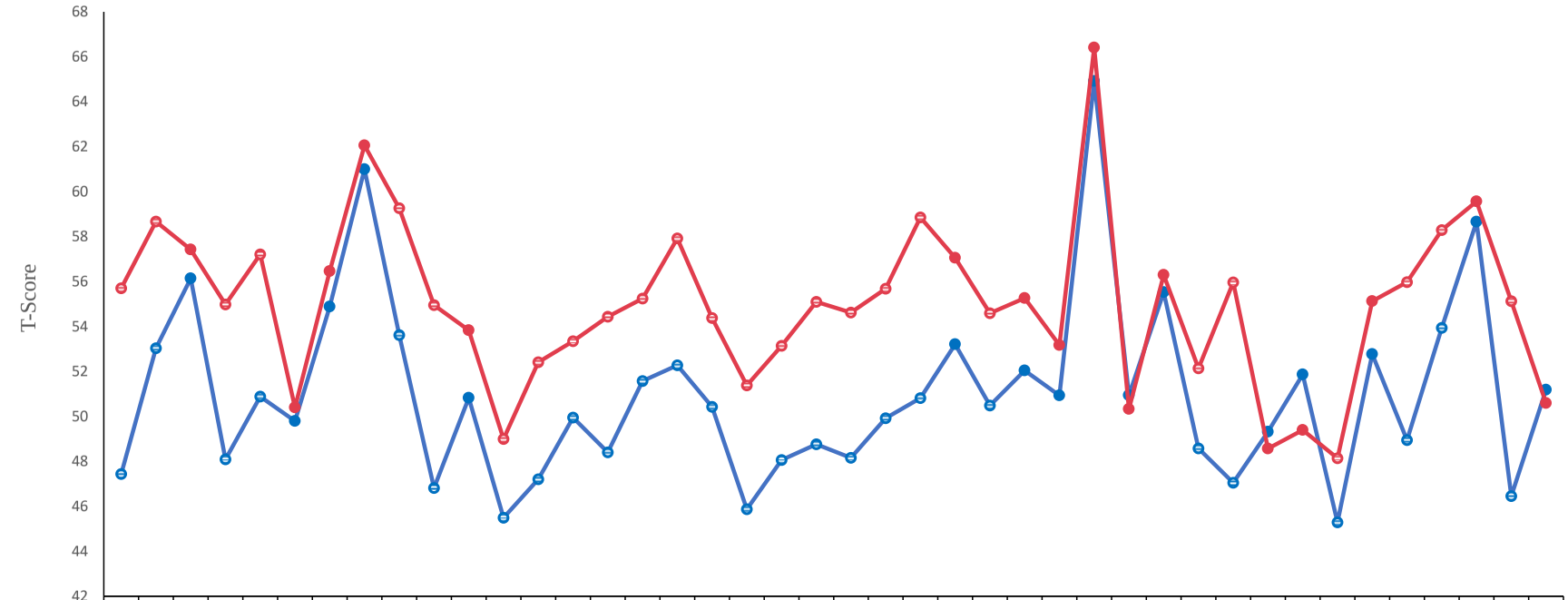
Figure 1. MMPI-A-RF Clinical Scale Profiles of Adjudicated Youth Between Trauma and No Trauma Groups



	EID	THD	BXD	RCd	RC1	RC2	RC3	RC4	RC6	RC7	RC8	RC9	MLS	GIC	HPC	NUC	COG	HLP	SFD	NFC	OCS	STW	AXY	ANP	BRF	SPF	NSA	ASA	CNP	SUB	NPI	AGG	FML	IPP	SAV	SHY	DSF	AGGR-r	PSYC-r	DISC-r	NEGE-r	INTR-r
Trauma	51.4	56.1	57.5	51.5	53.5	52.3	55.1	62	56.9	50	51.8	45.9	51.2	51.4	50.3	54.1	55.9	52.2	48.5	50.1	51.9	50.4	52.4	53.7	54.4	52	55	50.7	67.1	50.5	55.3	51.2	51.3	50.4	52.5	47.3	53.8	52.6	55.7	59.9	49.7	53
No Trauma	47.5	52.8	55.6	47.9	51.2	48.1	55.3	60.7	53.1	47.4	51.2	46.7	46	50.1	49.2	51	51.6	50.5	45.9	48.4	48.7	48.8	50.1	51.5	53.7	50.8	51	52	63.8	51	56	47.9	47.1	48.2	50.5	44.8	52.9	48.7	54.2	58.1	47.2	49.6

**Patterned data points represent statistical difference; solid data points represent no statistical difference*

Figure 2. MMPI-A-RF Clinical Scale Profiles of Adjudicated Youth Between Male and Female Groups



	EID	THD	BXD	RCd	RC1	RC2	RC3	RC4	RC6	RC7	RC8	RC9	MLS	GIC	HPC	NUC	COG	HLP	SFD	NFC	OCS	STW	AXY	ANP	BRF	SPF	NSA	ASA	CNP	SUB	NPI	AGG	FML	IPP	SAV	SHY	DSF	AGGR-r	PSYC-r	DISC-r	NEGE-r	INTR-r
Male	47.4	53	56.1	48.1	50.9	49.8	54.9	61	53.6	46.8	50.8	45.5	47.2	50	48.4	51.6	52.3	50.4	45.9	48.1	48.8	48.2	49.9	50.8	53.2	50.5	52	50.9	64.9	50.9	55.5	48.6	47.1	49.3	51.9	45.3	52.8	49	53.9	58.7	46.5	51.2
Female	55.7	58.7	57.4	55	57.2	50.4	56.5	62.1	59.3	55	53.8	49	52.4	53.4	54.4	55.3	57.9	54.4	51.4	53.1	55.1	54.6	55.7	58.9	57.1	54.6	55.3	53.2	66.4	50.3	56.3	52.1	56	48.6	49.4	48.1	55.1	56	58.3	59.6	55.1	50.6

**Patterned data points represent statistical difference; solid data points represent no statistical difference*

ANALYSIS 2

Researchers also determined whether or not clinical scales on the MMPI-A-RF that were identified as statistically significant for distinguishing juveniles that endorsed experiencing trauma, can accurately predict juveniles who have a reported history of trauma versus those who have not. Researchers used a Hierarchical Binary Logistic Regression analysis with the total sample with 95% confidence. MMPI-A-RF clinical scales that did not statistically differ at the $\alpha = .05$ level were excluded from the predictive model. The Hierarchical Binary Logistic Regression Analysis was selected because the focal group can be compared to the reference group by integrating a multilevel within or between group design (Swanson et al., 2002). According to French and Finch (2010), when data are measured consistent to the data structure in the analyses using clusters, the likelihood of Type I error decreases. These data can then be examined independently through each cluster, and coefficients from previous models become random variables to be predicted to detect differential item functions, which strengthens the reliability and power of the outcome (Houpt & Bittner, 2018; Swanson et al., 2002).

MMPI-A-RF clinical scales of statistical significance for identifying mean differences for those with trauma were separated to clusters by structure of the MMPI-A-RF, and introduced into the regression model in the following order: H-O scales, RC scales, SP scales, and then the PSY-5 scales. Analogs of Cook's influence statistics were computed to identify outliers for the Hierarchical Binary Logistic Regression Analysis. All Cook's distances fell below .50. To evaluate the model's goodness of fit, Hosmer and Lemeshow tests were performed; results indicated no conflict with model assumptions of fit ($p > .05$). Chi-square tests of independence were performed with the MMPI-A-RF scales of significance for reported trauma history (presence or absence).

Results

Using the Hierarchical Binary Logistic Regression, the 19 significant MMPI-A-RF clinical scales were entered into the model in structural order. The contributions of each variable subset (H-O, RC, SP, and PSY-5) were tested alone, controlling for previous variables at the point of entry, and controlling for all other variables in the final model.

Within the first Hierarchical Binary Logistic Regression cluster, two MMPI-A-RF H-O clinical scales statistically predicted reported trauma history for the total sample in the first level, χ^2 (2, 308) = 9.606, $p < .05$; a small effect size was indicated (Nagelkerke $R^2 = .041$). However, neither Emotional/Internalizing Dysfunction (EID), Wald χ^2 (1, 308) = 3.138, $p = .078$ or Thought Dysfunction (THD) scales, Wald χ^2 (1, 308) = .876, $p = .349$, statistically predicted whether an adjudicated youth reported a history of trauma. Findings revealed a sensitivity of 25.6% and specificity of 87.4% for predicting the absence or presence of reported trauma, with an overall 60.7% accuracy. Scores yielded 12.6% false negatives and 74.4% false positives. In this model, since the model accuracy is less than the 62.5% by chance accuracy criteria, it is suggested that scales EID and THD can statistically predict adjudicated youth who do not have trauma, but cannot predict juvenile offenders' presence of trauma.

In the second cluster, H-O and RC scales of significance for trauma were identified as statistical predictors for the total sample, χ^2 (7, 308) = 21.944, $p < .05$; a small effect size was indicated (Nagelkerke $R^2 = .092$). The Low Positive Emotions (RC2) scale statistically predicted whether an adjudicated youth will report a history of trauma, Wald χ^2 (1, 308) = 9.077, $p < .05$. The odds ratio of 1.047 indicates that juvenile offenders were 1.047 times more likely to have a reported trauma history for every one point increase on the Low Positive Emotions scale. The remaining six, H-O and RC clinical scales were not statistical predictors for identifying reported

trauma history among the total sample. Findings revealed a sensitivity of 42.9% and specificity of 80.6% for predicting the absence or presence of reported trauma, with an overall 64.3% accuracy. Scores yielded 19.4% false negatives and 57.1% false positives.

The third cluster of the model measuring H-O, RC, and significant SP clinical scales for was a statistical predictor of trauma history status for the total sample, χ^2 (17, 308) = 42.999, p < .001; a small effect size (Nagelkerke R^2 = .175) was indicated. RC2 statistically predicted whether an adjudicated youth reported a history of trauma, Wald χ^2 (1, 308) = 4.010, p < .05. The odds ratio of 1.047 indicates that juvenile offenders were 1.047 times more likely to have a reported trauma history for every one point increase on the RC2 scale. In addition, MLS statistically predicted the likelihood a juvenile youth reported trauma history, Wald χ^2 (1, 308) = 6.928, p < .05. The odds ratio of 1.047 indicates that juvenile offenders were 1.047 times more likely to have a reported trauma history for every one point increase on the MLS scale. The remaining 15 H-O and RC clinical scales significant for identifying trauma were not statistical predictors for the total sample. Findings revealed a sensitivity of 49.6% and specificity of 76.6% for predicting the absence or presence of reported trauma, with an overall 64.9% accuracy. Scores yielded 23.4% false negatives and 50.4 % false positives. Refer to Tables 3.1 -3.2 for more information.

In cluster four, analyses revealed the use of 19 MMPI-A-RF clinical scales significant for detecting reported trauma were significant predictors of the total sample, χ^2 (19, 308) = 43.035, p < .001; a small effect size (Nagelkerke R^2 = .175) was indicated. However, only one MMPI-A-RF clinical scale, Malaise (MLS), statistically differentiated and predicted whether an adjudicated youth will report a history of trauma, Wald χ^2 (1, 308) = 6.928, p < .05. The odds ratio of 1.047 indicates that juvenile offenders were 1.047 times more likely to have a reported

trauma history for every one point increase in their MLS T-score. The remaining 18 MMPI-A-RF clinical scales significant for identifying trauma were not statistical predictors for the total sample. Regarding diagnostic efficacy statistics for MLS, scores yielded 24% false negatives and 49.6% false positives. Findings revealed a sensitivity of 50.4% and specificity of 76% for predicting the absence or presence of reported trauma, with an overall 64.9% accuracy. The proportional by chance accuracy rate was calculated from the proportion of cases for each group based on the number of cases in each group and then squaring and summing the proportion of cases in each group. Since the accuracy rate for the model, 64.9%, is greater than the 62.5% by chance accuracy criteria, the overall logistic regression model is deemed useful in predicting group membership for individuals that have reported trauma history. Specifically, the overall logistic regression model is deemed useful in predicting group membership for individuals that have trauma history for MLS. (Refer to Tables 3.1-3.2)

Table 3.1

Hierarchical Binary Logistic Regression of MMPI-A-RF Clinical Scales Significant for Trauma (Model: Cluster 4 only)

Variable	β	S.E.	Wald χ^2	Exp (B)	X^2	Nagelkerke R^2
Step 4					43.035***	0.175
Emotional/Internalizing Dysfunction (EID)	0.043	0.047	0.841	1.044		
Thought Dysfunction (THD)	-0.043	0.033	1.675	0.958		
Demoralization (RCd)	-0.080	0.043	3.521	0.923		
Somatic Complaints (RC1)	-0.033	0.023	2.102	0.967		
Low Positive Emotions (RC2)	0.031	0.020	2.405	1.031		
Ideas of Persecution (RC6)	0.052	0.030	3.001	1.053		
Dysfunctional Negative Emotions (RC7)	-0.006	0.022	0.077	0.994		
Malaise (MLS)	0.046	0.017	6.928**	1.047		
Neurological	0.012	0.019	0.409	1.012		

Complaints (NUC)				
Cognitive Complaints (COG)	0.014	0.015	0.934	1.014
Self-Doubt (SFD)	-0.001	0.021	0.004	0.999
Obsessions/Compulsions (OCS)	0.022	0.014	2.428	1.022
Negative School Attitudes (NSA)	0.000	0.012	0.000	1.000
Conduct Problems (CNP)	0.019	0.014	1.847	1.020
Aggression (AGG)	0.011	0.026	0.160	1.011
Family Problems (FML)	0.024	0.015	2.500	1.025
Shyness (SHY)	0.019	0.022	0.740	1.019
Aggressiveness-Revised (AGGR-r)	-0.004	0.025	0.032	0.996
Introversion/Low Positive Emotionality-Revised (INTR-r)	0.001	0.020	0.005	1.001
Constant	-6.774	1.381	24.048***	0.001

* = $p<.05$, ** = $p<.01$, *** = $p<.001$

Table 3.2.

MMPI-A-RF Clinical Scales as a Predictor of Trauma/No-Trauma Groups

	Predicted		
(N = 308)	*No Reported Trauma*	*Reported Trauma*	*Percentage Correct*
No Reported Trauma	133	42	76%
Reported Trauma	66	67	50.4%
Overall Percentage			64.9%

ANALYSIS 3

To identify mean differences and predictability at the item level, a Stepwise Discriminant Analysis was used with MMPI-A-RF clinical scales that were previously determined as significant for trauma and predicted whether or not juvenile youth have experienced trauma. Measured MMPI-A-RF clinical scales were separated by structure of the MMPI-A-RF, beginning with the H-O scales, RC scales, SP scales, and the PSY-5 scales of significance for identifying mean item level differences for those with and without trauma. The Stepwise Discriminant Analysis was performed with the total sample with 95% confidence.

Results

Measuring the predictive MMPI-A-RF clinical scale (i.e. MLS scale) items for identifying trauma, the Test of Equality of Group Means suggested two of eight items were non-significant. This indicates items 117, Wilk's $\Lambda = 1.000$, F (1, 306) = 0.096, $p = 0.757$, and 217, Wilk's $\Lambda = 0.999$, F (1, 306) = 0.227, $p = 0.634$, suggest variances could be unequal for these dependent variables. The Box's Test of Equality of Covariance Matrices was also used to determine normality and was significant, *Box's M* = 29.351, $p = .000$, suggesting the null hypothesis cannot be rejected confidently. As a result, descriptive statistics were then used to determine if data satisfied the assumptions of multivariate normality for each dependent variable and each appear to be normally distributed.

Two of the eight items within the MLS clinical scale were deemed significant in predicting juvenile youth who have not experienced trauma, Wilk's $\Lambda = 0.934$, F (2, 305) = 10.718, $p < 0.001$, partial $\eta^2 = 0.066$. Refer to tables 4.1- 4.2 for results.

Table 4.1.

Stepwise Structure Matrix of MMPI-A-RF Malaise (MLS) Clinical Items Predicting Trauma History Among Juvenile Offenders

Total Sample (N = 308)	*Loading*
120. I am in just as good physical health as most of my friends.	**.842**
150. During the past few years I have been well most of the time.	**.674**
217. My daily life is full of things that keep me interested.	.278
13. I feel weak all over much of the time.	.271
125. I wake up fresh and rested most mornings.	.247
210. I do not tire quickly.	.229
18. I am about as able to work as I ever was.	.218
117. I have never felt better in my life than I do now.	.001

**Bolded items were retained in the analysis; all other items were removed from predictive model*

Data suggests that juvenile youth endorsing false on items 120 and 150 on the MMPI-A-RF indicate an increased likelihood they have not experienced trauma.

Table 4.2.

Cross Validated Discriminant Function of SP-MLS Clinical Scale Items

	Predicted		
Cross Validated (N=308)	*No Reported Trauma*	*Reported Trauma*	*Percentage Correct*
No Reported Trauma	133	42	76%
Reported Trauma	74	59	44.4%
Overall Percentage			62.3%

SUMMARY OF FINDINGS

To answer the first two hypotheses including the evaluation of mean differences in the MMPI-A-RF clinical scale scores between juvenile offenders that have experienced trauma versus offenders that have not experienced trauma, as well as, mean differences in the MMPI-A-RF clinical scale scores between male and female juvenile youth, ultimately one-way MANOVA models were used to improve statistical strength. The Between-Subjects Effects from each one-way MANOVA model described that juvenile youth that have experienced trauma are likely to endorse higher clinical scale scores on Emotional/Internalizing Dysfunction, Thought Dysfunction, Demoralization, Somatic Complaints, Low Positive Emotions, Ideas of Persecution, Dysfunctional Negative Emotions, Malaise, Neurological Complaints, Cognitive Complaints, Self-Doubt, Obsessions/Compulsions, Negative School Attitudes, Conduct Problems, Aggression, Family Problems, Shyness, Aggressiveness-Revised, and Introversion/Low Positive Emotionality- Revised when compared to juvenile youth that have no reported trauma history. In addition, for differences in gender across MMPI-A-RF clinical scales, females were more likely than males to endorsed higher clinical scale scores of Emotional/Internalizing Dysfunction, Thought Dysfunction, Demoralization, Somatic Complaints, Ideas of Persecution, Dysfunctional Negative Emotions, Hypomanic Activation, Malaise, Gastrointestinal Complaints, Head Pain Complaints, Neurological Complaints, Cognitive Complaints, Helplessness/Hopelessness, Self-Doubt, Inefficacy,

Obsessions/Compulsions, Stress/Worry, Anxiety, Anger Proneness, Specific Fears, Aggression, Family Problems, Shyness, Aggressiveness-Revised, Psychoticism-Revised, and Negative Emotionality/ Neuroticism-Revised when compared to male juvenile youth.

Of the MMPI-A-RF clinical scales significant for trauma for the total sample of juvenile youth, Hierarchical Binary Logistic Regression Analysis determined predictability to answer the third hypothesis. Results indicated juvenile youth who reported experiencing symptoms across 19 clinical scales as a whole are more likely to have experienced trauma with an overall 64.9% accuracy. Specifically, the Malaise clinical scale suggested it is predictable for identifying who has experienced trauma compared to those who have not. All other scales did not differentiate for predictability. To answer hypotheses four and five of identifying mean differences and predictability at the item level, a Stepwise Discriminant Analysis was used with the MMPI-A-RF Malaise scale that was deemed predictive of trauma. Results indicated two of the eight items (items 120 and 150) that make up the Malaise scale were statistically significant and predictive of individuals who have not experienced trauma with an overall 62.3% accuracy.

CHAPTER V

DISCUSSION

Experiences and responses to trauma together are one of the nation's largest public health concerns (van der Kolk, 2014). This manuscript has demonstrated youth experience trauma at an alarming rate, however, juvenile youth are significantly more affected by victimization and re-victimization compared to non-delinquent youth (Robst et al., 2017). Though overall trends for youth involved in the juvenile justice system have been declining, hundreds of thousands of adolescents continue to engage in illegal behavior that lead to arrests, detention, and/or probation each year (OJJDP, 2019b). Of the juvenile youth involved in the criminal justice system, traumatic events are witnessed or experienced from a range of 45-90%, and predominantly affect females compared to males (Stimmel et al., 2014). Engaging in risky behavior can often be a response to trauma illustrating externalized symptoms (Darnell et al., 2019). This evidence suggests proper, standardized psychological evaluations are needed, in addition to practices of trauma informed care for staff members working alongside juvenile youth. Without adequate assessments by trained mental health clinicians, trauma symptoms may be unrecognized or misdiagnosed, reducing the likelihood for proper treatment of these symptoms and adolescents can then become further at risk for other victimizations and recidivism (Selwyn et al., 2019). With full psychological assessments and trauma informed care throughout the juvenile justice system, healthier coping can be promoted through a collective sense of safety with proper responses to youths that may become activated by the unpredictability of an intimidating and restricting environment (Branson et al., 2017; Pickens, 2016). As such, to prevent further

exacerbation of experienced symptoms that may be related to trauma, this study argues youth should be assessed in an accurate and timely fashion, specifically with the *Minnesota Multiphasic Personality Inventory–Adolescent-Restructured Form* (MMPI-A-RF).

The current study investigated trauma symptomology in juvenile offenders using the MMPI-A-RF to understand and improve assessment and treatment standards. Forensic psychologists have widely used the *Minnesota Multiphasic Personality Inventory–Adolescent* (MMPI-A) to identify dysfunction among personality and psychopathology constructs in adjudicated youth, therefore, this project aimed to discover significant differences for youth that reported trauma history using the newest version of the MMPI-A, the MMPI-A-RF (Archer et al., 2006; Archer et al., 2016). The study also sought to identify mental health symptom differences between gender in comparison to MMPI-A-RF clinical scales that differ by reported trauma history. In addition, predictability for items and clinical scales of significance for trauma were measured to explore utility of the MMPI-A-RF as a trauma assessment tool for adjudicated youth. Hypotheses were created to identify areas for further clinical investigation for treatment if certain items or scales were endorsed on the MMPI-A-RF that were accurately predictive of trauma.

Results from a two-way MANOVA comparing MMPI-A-RF clinical scales suggested that regardless of gender type, mental health symptoms endorsed on the MMPI-A-RF clinical scales are experienced differently among adjudicated youth who have experienced trauma. More specifically, after completion of several one-way MANOVAs, 19 of 42 MMPI-A-RF clinical scales, were identified as statistically significant for individuals endorsing a trauma history. Scales identified as significant include two Higher-Order (H-O) scales, five Restructured Clinical (RC) scales, 10 Specific Problem (SP) scales, and two Personality Psychopathology Five (PSY-

5) scales. These data suggests juvenile youth that experience trauma may likely experience internalizing difficulties, paranoid/persecutory ideations, delusions or auditory and visual hallucinations, unhappiness and hopelessness, somatic complaints, a lack positive experiences, socially disengagement, a higher level of negative emotions, health difficulties, numbness or dizziness, memory difficulties, confusion, feelings of inferiority, obsessive and compulsive thoughts, negative attitudes toward school, behavioral or academic problems, physically aggressive behavior, conflicts with family or limited family support, social anxiety, extensive use of aggression in interpersonal relationships, and isolation/anhedonia (Archer et al., 2016). These symptoms are consistent with DSM-5 criteria for PTSD, as well as, previously discussed literature of experienced trauma symptoms for juvenile youth (American Psychiatric Association, 2013).

Results regarding significant differences found between juvenile youth that reported trauma history from this study are mostly consistent with previous research from Edner et al. (2018) using the MMPI-A. Edner et al. (2018) concluded across MMPI-A clinical scales, scores on scales of Paranoia, Psychasthenia, Schizophrenia, and Social Introversion were significantly different among juvenile youth that endorsed a history of trauma. According to Archer et al. (2016), within restructured and substantive clinical scales on the MMPI-A-RF, there are three most highly correlated scales of content on the MMPI-A. Of these, scales highly correlated with aforementioned scales of significance for trauma on the MMPI-A include MMPI-A-RF clinical scales of Emotional/Internalizing Dysfunction (EID), Thought Dysfunction (THD), Demoralization (RCd), Ideas of Persecution (RC6), Shyness (SHY), Introversion/ Low Positive Emotionality-Revised (INTR-r), Psychoticism-Revised (PSYC-r), Negative Emotionality/ Neuroticism-Revised (NEGE-r), and Infrequent Responses (F-r). Six of the MMPI-A-RF clinical

scales are consistent with Edner et al. (2018) research, including EID, THD, RCd, RC6, SHY, and INTR-r, with the exception of PSYC-r, NEGE-r, and F-r.

Likewise, results from a two-way MANOVA model indicated that regardless of a reported trauma history, mental health symptoms across MMPI-A-RF clinical scales are experienced differently among cisgender male and female adjudicated youth. Across a one-way MANOVA model, 26 of 42 MMPI-A-RF clinical scales were identified as clinically significant among gender groups, with females endorsing a higher level of distress when compared to males. Scales identified as significant include two H-O scales, five RC scales, 16 SP scales, and three PSY-5 scales. These data suggest female juvenile youth may likely experience internalizing difficulties, paranoid/persecutory ideations, delusions or auditory and visual hallucinations, unhappiness and hopelessness, somatic complaints, a higher level of negative emotions, need for excitement and stimulation, health difficulties, gastrointestinal complaints, head pain, numbness or dizziness, memory difficulties, confusion, helplessness, low self-esteem, indecisiveness and an inability to cope, obsessive and compulsive thoughts, a higher level of stress and anxiety, irritability and impatience, multiple fears and phobias, physically aggressive behavior, conflicts with family or limited family support, social anxiety, extensive use of aggression in interpersonal relationships, unusual beliefs and experiences, and consistent feelings of worry, embarrassment or dread when compared to their male counterparts (Archer et al., 2016). These results are also consistent with previously discussed evidence that female juvenile youth are more likely to have experienced trauma, females may report a higher level of symptomology related to trauma, and females that have not experienced trauma report experiencing more mental health symptoms when compared to their male counterparts, though there were largely fewer females in the sample (Wamser-Nanney & Cherry, 2018). Specifically, these results are consistent with

Calhoun (2001) and Connelly et al. (2019) results that females experience more social stress, anxiety and depressive symptoms, low self-esteem, and have difficulties in their relationships. These results are also useful in determining other symptoms female juvenile youth experience in order to be adequately treated by mental health staff members involved in the juvenile justice system.

To test predictability of the 19 MMPI-A-RF clinical scales identified of significance for distinguishing juveniles that endorsed experiencing trauma, a Hierarchical Binary Logistic Regression Analysis was used. This statistical analysis was divided beginning with the H-O scales, RC scales, SP Scales, and the PSY-5 scales of significance for identifying mean differences for those with trauma. The model indicated that as a whole, the identified 19 MMPI-A-RF clinical scales were accurately predictive of an adolescent offender's trauma history by 64.9% percent. However, only one single predictor variable within cluster four, Malaise (MLS) illustrated significance for a higher likelihood that a juvenile youth will report a history of trauma. The remaining 18 MMPI-A-RF clinical scales significant for identifying trauma were not statistical predictors for the total sample. Overall, the logistic regression model is deemed useful in predicting group membership for individuals that have reported trauma history as a whole, while only one predictor, T-scores on the MLS scale, was deemed useful in predicting group membership for trauma history. The model's ability to predict trauma as a whole for 19 MMPI-A-RF clinical scales is mostly consistent with results from Edner et al. (2019) for predictability of MMPI-A clinical scales of Paranoia, Psychasthenia, Schizophrenia, and Social Introversion that correlate with MMPI-A-RF clinical scales of EID, THD, RCd, RC6, SHY, and INTR-r.

At the item level, a Stepwise Discriminant Analysis was used using the MLS clinical scale to measure mean differences and predictability. Results indicated two of eight items within the MLS clinical scale were deemed significant in predicting juvenile youth who have not experienced trauma. These items include *"I am in just as good physical health as most of my friends"* and *"During the past few years I have been well most of the time*" or items 120 and 150 on the MMPI-A-RF marked false. The current study's results at the item level are not consistent with previous research by Murray et al. (2013) and Edner et al. (2019) among items previously identified as significant and predictive of trauma. However, researchers found significant results for relationships and predictive utility between the MMPI-A-RF clinical scales and items.

Overall, 19 of the 42 MMPI-A-RF clinical scales of significance are indicators that juvenile youth may have experienced trauma if the scale's T-score is elevated. More specifically, these findings reveal that higher T-scores on the MLS scale can be useful evaluate the likelihood that a juvenile offender may have experienced a history of trauma. After scoring and interpreting the MMPI-A-RF, further assessment from a mental health professional would be required to adequately evaluate an adolescent offender for treatment if trauma history was not previously endorsed or recorded. Appropriately attributing current presentation of symptoms to prior experiences will enable the accuracy of treatment of an adolescent offender from professionals trained in trauma-specific therapies, such as Eye Movement Desensitization Reprocessing Therapy, Cognitive Processing Therapy, Prolonged Exposure Therapy, Trauma-Focused Cognitive Behavioral Therapy, or using and any other evidenced-based practices to treat trauma related symptoms (Ford et al., 2012; Rizvi, Vogt, & Resick, 2009). These treatments will in turn not only aid reduction of the adolescent's psychological distress, but treatment may also reduce the likelihood of recidivism. In regard to gender, clinicians may see significantly more elevations

in MMPI-A-RF clinical scales for female juvenile youth when compared to males. This evidence indicates more thorough evaluations for female delinquent youth are needed to prevent potential negative consequences from demonstrated significance of emotional distress that may occur at a higher rate compared to adolescent males. This research also suggests that though females report experiencing a higher level of mental health symptoms than males, further exploration of male psychological symptoms are warranted to rule out any underreporting concerns. Consequently, in addition to the use of the MMPI-A-RF, other trauma measures, and interviews with clients and caregivers are necessary to ensure consistency and accuracy of the treatment of trauma and/or any other mental health symptoms for youth involved in the juvenile justice system.

LIMITATIONS & FUTURE DIRECTIONS

Due to the nature of the study, several limitations should be recognized. First, generalizability of the findings may be limited since the sample included court referred youth for evaluation/treatment services from a small demographic area. Additionally, the use of self-report for trauma history and trauma symptomology have drawbacks for the potential of error or the underestimation of type or frequency of incidences of trauma that have occurred within the sample (Edner et al., 2017; Perkins, et al., 2016). Youth may underreport exposure to a traumatic event, definitions/perceptions of what trauma is may vary on an individual basis, and emotional avoidance may have occurred (Edner et al; 2017; Marsiglio, Chronister, Gibson, & Leve, 2014; Perkins et al., 2016). Additionally, the use of self-report measures may have also impacted the normality distribution of the dataset, thus impacting the outcome of the study. Future directions include maintaining awareness for normality concerns and eliminating outliers to meet normality assumptions if possible. Trauma categories used followed previous studies and may have restricted trauma exposure type to five categories. Researchers acknowledge these restrictions, as

well as, challenges in identifying ongoing and complex forms of trauma (Ray, Glaser, Calhoun, & Heckman, 2017).

Within the sample, there are also several aspects of diversity to consider in that the majority of participants identified as cisgender male and African American. The MMPI-A-RF was normed within a generalized sample of adolescents that predominantly identified as White (Archer et al., 2016), which may have impacted results. Further, the MMPI-A-RF does not recognize nonbinary gender identities and the outcome of the study may have been influenced if participants identified separately from cisgender male or female categories. Future studies require more demographically diverse regions to be included in the sample to further investigate differences between ethnicity/race, offense type, age, sexual orientation, gender identity, and current detention status, with an equal number of male, female, and nonbinary gender ratios.

Lastly, this study used archival data with conversions of the original MMPI-A to the MMPI-A-RF. As a result, over the span of up to 20 years of the Juvenile Counseling and Assessment Program's research, societal norms for expression and experience of emotions may have fluctuated over time, thus impacting results of symptoms endorsed or acknowledged. Further, with the reconstruction of the MMPI-A-RF, several scale items overlap and may have contributed to similarities or differences between scales. Researchers acknowledge that this study is first of its kind to exploring trauma symptoms among juvenile youth based on the release date of the MMPI-A-RF. In addition, replication studies measuring validity and reliability of MMPI-A-RF clinical scales are continuing to be explored as research has been limited thus far. Consequently, further investigation is required to replicate and expand the generalizability of this study and the MMPI-A-RF. In addition, to identify patterns within trauma symptomology using the MMPI-A-RF, future studies may consider differentiating between juvenile offender offense.

Despite these limitations, considerations have been provided for future studies and other significant results were found among relationships between the MMPI-A-RF clinical scales, clinical scale items, gender, and the presence of trauma.

IMPLICATIONS

Identifying the relationship between MMPI-A-RF and trauma changes the way mental health professionals assess and treat trauma symptoms among justice involved youth. Recent research has shown that trauma is not typically assessed by counselors/psychologists specifically unless it is otherwise indicated through referral sources (Perkins et al., 2016). In addition, if trauma is assessed through a clinical interview, individual definitions for what is considered trauma and/or abuse depending on questions asked can be misinterpreted (Ford et al., 2012). Therefore, the likelihood the clinician will be able to thoroughly assess and provide a trauma specific treatment is reduced (Ford et al., 2012). Further, Dargis et al. (2018) and Ford et al. (2012) assert that adolescents can under or over report symptomology. Consequently, the MMPI-A-RF serves as a mechanism to identify particular areas of over- or under reporting and can provide insight to a client's interpersonal experience as it pertains to trauma on 19 clinical scales. MMPI-A-RF results can then be used to individualize treatment based on the client's current presentation of symptoms. With improved assessment and treatment methods, as well as, an increased frequency in completing mental health evaluations of juvenile youth, numerous negative consequences can be avoided. Potential consequences can include the potential for future offending and reduction in any current mental or physical health symptoms worsening or developing into personality traits (Heaton, 2018). Accurate diagnosis and treatment related to trauma is vital to reduce risks of continued illegal behavior in addition to enhancing overall well-being in adjudicated youth (Perkins et al., 2016).

Other ways these data contribute to changes in the juvenile justice system is that it provides evidence to emphasize trauma informed care from all staff members, as opposed to previous punitive approaches to youth in detention settings. With the provision of psychoeducation for detention staff members, the aim is to reduce recidivism, thus reducing tax-payer cost, and rehabilitating juvenile offenders long-term. Psychoeducation to staff will in turn create juvenile justice systems that promote alternative ways adolescents can cope, as well as, engage in safe and healthy behaviors.

Finally, the purpose of this research is to also reduce racialization through advocacy and a commitment to multiculturalism and social justice. Predominantly, minority youth, as well as, those that are affected by poverty, come from neighborhoods affected by crime, violence, and loss more often and are more likely to become involved in the justice system (Rapp, 2016). This research is aimed at reducing systemic inequalities by promoting the facilitation of change for social institutions, political and economic systems, governmental structures, and unfair policies that minimize access to human rights (Toporek, et al., 2012).

CONCLUSION

With the development of a shortened measure to improve client attentiveness and concentration for test administration, as well as, reduced heterogeneity in improvements of validity scales, the development of the demoralization scale, recreated clinical scales, and the inclusion of a three-tiered hierarchical structure, the MMPI-A-RF is demonstrated as a useful tool for clinicians to assist treatment of juvenile youth (Archer et al., 2016; Handel, 2016). Specifically, the MMPI-A-RF's clinical utility acknowledges symptoms related to trauma among juvenile youth that can accurately predict whether or not an adolescent offender has experienced trauma, specifically if they experience health complaints. In addition to trauma symptoms,

various clinical presentations among female juvenile youth were identified in comparison to male youth. Though continued research is necessary to explore the validity, reliability, and generalizability of the MMPI-A-RF within juvenile offender populations, if juvenile youth affected by trauma are assessed with this measure and treated early, offending or problem behavior is likely to decrease in the future, thus improving their overall developmental trajectory.

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APPENDIX

Table A1.

Levene Test Results for Two-Way MANOVA for MMPI-A-RF Clinical Scales Between Trauma and No Trauma Groups and Male and Female Groups Among Juvenile Youth before transformations

MMPI-A-RF Clinical Scale	*F*	*df*1	*df2*	*p*-value
Emotional/Internalizing Dysfunction (EID)	4.423	3	304	0.005**
Thought Dysfunction (THD)	1.012	3	304	0.387
Behavioral/Externalizing Dysfunction (BXD)	1.577	3	304	0.195
Demoralization (RCd)	3.459	3	304	0.017*
Somatic Complaints (RC1)	3.486	3	304	0.016*
Low Positive Emotions (RC2)	0.215	3	304	0.886
Cynicism (RC3)	1.030	3	304	0.379
Antisocial Behavior (RC4)	2.250	3	304	0.083
Ideas of Persecution (RC6)	1.112	3	304	0.344
Dysfunctional Negative Emotions (RC7)	3.134	3	304	0.026*
Aberrant Experiences (RC8)	1.153	3	304	0.328
Hypomanic Activation (RC9)	1.173	3	304	0.320
Malaise (MLS)	3.177	3	304	0.024*
Gastrointestinal Complaints (GIC)	5.440	3	304	0.001***
Head Pain Complaints (HPC)	3.748	3	304	0.011*
Neurological Complaints (NUC)	2.867	3	304	0.037*
Cognitive Complaints (COG)	1.096	3	304	0.351
Helplessness/Hopelessness (HLP)	1.100	3	304	0.349
Self-Doubt (SFD)	4.903	3	304	0.002**
Inefficacy (NFC)	2.153	3	304	0.094
Obsessions/Compulsions (OCS)	4.024	3	304	0.008**
Stress/Worry (STW)	3.508	3	304	0.016*
Anxiety (AXY)	4.730	3	304	0.003**
Anger Proneness (ANP)	0.034	3	304	0.992
Behavior-Restricting Fears (BRF)	6.145	3	304	0.000***
Specific Fears (SPF)	1.070	3	304	0.362
Negative School Attitudes (NSA)	0.287	3	304	0.834
Antisocial Attitudes (ASA)	1.296	3	304	0.276
Conduct Problems (CNP)	0.626	3	304	0.599
Substance Abuse (SUB)	0.446	3	304	0.720
Negative Peer Influence (NPI)	1.303	3	304	0.274
Aggression (AGG)	3.126	3	304	0.026*
Family Problems (FML)	9.630	3	304	0.000***
Interpersonal Passivity (IPP)	2.053	3	304	0.106
Social Avoidance (SAV)	1.731	3	304	0.161
Shyness (SHY)	0.635	3	304	0.593

Disaffiliativeness (DSF)	2.126	3	304	0.097
Aggressiveness-Revised (AGGR-r)	2.620	3	304	0.051
Psychoticism-Revised (PSYC-r)	0.497	3	304	0.685
Disconstraint-Revised (DISC-r)	1.936	3	304	0.124
Negative Emotionality/ Neuroticism-Revised (NEGE-r)	8.821	3	304	0.000***
Introversion/Low Positive Emotionality-Revised (INTR-r)	1.408	3	304	0.240

* = $p<.05$, ** = $p<.01$, *** = $p<.001$

Table A2.

Levene Test Results for Two-Way MANOVA for MMPI-A-RF Clinical Scales Between Trauma and No Trauma Groups and Male and Female Groups Among Juvenile Youth (log10)

MMPI-A-RF Clinical Scale	*F*	*df*1	*df2*	*p*-value
Emotional/Internalizing Dysfunction (EID)	1.524	3	304	0.208
Thought Dysfunction (THD)	0.287	3	304	0.835
Behavioral/Externalizing Dysfunction (BXD)	1.515	3	304	0.211
Demoralization (RCd)	1.205	3	304	0.308
Somatic Complaints (RC1)	1.896	3	304	0.130
Low Positive Emotions (RC2)	0.459	3	304	0.711
Cynicism (RC3)	1.400	3	304	0.243
Antisocial Behavior (RC4)	1.914	3	304	0.127
Ideas of Persecution (RC6)	0.200	3	304	0.896
Dysfunctional Negative Emotions (RC7)	1.173	3	304	0.320
Aberrant Experiences (RC8)	0.781	3	304	0.505
Hypomanic Activation (RC9)	0.743	3	304	0.527
Malaise (MLS)	1.002	3	304	0.392
Gastrointestinal Complaints (GIC)	5.369	3	304	0.001***
Head Pain Complaints (HPC)	2.186	3	304	0.090
Neurological Complaints (NUC)	2.036	3	304	0.109
Cognitive Complaints (COG)	0.343	3	304	0.795
Helplessness/Hopelessness (HLP)	1.062	3	304	0.366
Self-Doubt (SFD)	3.172	3	304	0.025*
Inefficacy (NFC)	1.159	3	304	0.326
Obsessions/Compulsions (OCS)	1.852	3	304	0.138
Stress/Worry (STW)	2.328	3	304	0.075
Anxiety (AXY)	2.677	3	304	0.047*
Anger Proneness (ANP)	0.353	3	304	0.787
Behavior-Restricting Fears (BRF)	5.297	3	304	0.001***
Specific Fears (SPF)	0.444	3	304	0.722
Negative School Attitudes (NSA)	0.098	3	304	0.961
Antisocial Attitudes (ASA)	0.637	3	304	0.592
Conduct Problems (CNP)	0.636	3	304	0.592
Substance Abuse (SUB)	0.453	3	304	0.715
Negative Peer Influence (NPI)	1.204	3	304	0.308
Aggression (AGG)	1.685	3	304	0.170
Family Problems (FML)	3.523	3	304	0.015*
Interpersonal Passivity (IPP)	1.127	3	304	0.338
Social Avoidance (SAV)	1.096	3	304	0.351
Shyness (SHY)	0.325	3	304	0.807
Disaffiliativeness (DSF)	1.853	3	304	0.138
Aggressiveness-Revised (AGGR-r)	1.268	3	304	0.286
Psychoticism-Revised (PSYC-r)	0.265	3	304	0.851
Disconstraint-Revised (DISC-r)	1.575	3	304	0.196

Negative Emotionality/ Neuroticism-Revised (NEGE-r)	4.626	3	304	0.004**
Introversion/Low Positive Emotionality-Revised (INTR-r)	1.180	3	304	0.317

* = $p<.05$, ** = $p<.01$, *** = $p<.001$

Table A3.

Levene Test Results for One-Way MANOVA for MMPI-A-RF Clinical Scales Between Trauma and No Trauma Groups Among Juvenile Youth (log10)

MMPI-A-RF Clinical Scale	*F*	*df*1	*df2*	*p*-value
Emotional/Internalizing Dysfunction (EID)	1.466	1	306	0.227
Thought Dysfunction (THD)	0.585	1	306	0.445
Behavioral/Externalizing Dysfunction (BXD)	0.050	1	306	0.823
Demoralization (RCd)	1.163	1	306	0.282
Somatic Complaints (RC1)	0.459	1	306	0.498
Low Positive Emotions (RC2)	0.605	1	306	0.437
Cynicism (RC3)	2.051	1	306	0.153
Antisocial Behavior (RC4)	0.050	1	306	0.824
Ideas of Persecution (RC6)	0.819	1	306	0.366
Dysfunctional Negative Emotions (RC7)	0.204	1	306	0.652
Aberrant Experiences (RC8)	0.291	1	306	0.590
Hypomanic Activation (RC9)	2.059	1	306	0.152
Malaise (MLS)	2.631	1	306	0.106
Gastrointestinal Complaints (GIC)	5.255	1	306	0.023*
Head Pain Complaints (HPC)	1.679	1	306	0.196
Neurological Complaints (NUC)	0.019	1	306	0.889
Cognitive Complaints (COG)	0.829	1	306	0.363
Helplessness/Hopelessness (HLP)	0.168	1	306	0.682
Self-Doubt (SFD)	9.789	1	306	0.002**
Inefficacy (NFC)	2.936	1	306	0.088
Obsessions/Compulsions (OCS)	1.191	1	306	0.276
Stress/Worry (STW)	4.604	1	306	0.033*
Anxiety (AXY)	0.013	1	306	0.909
Anger Proneness (ANP)	0.122	1	306	0.727
Behavior-Restricting Fears (BRF)	0.204	1	306	0.652
Specific Fears (SPF)	0.284	1	306	0.595
Negative School Attitudes (NSA)	0.045	1	306	0.833
Antisocial Attitudes (ASA)	0.005	1	306	0.944
Conduct Problems (CNP)	0.042	1	306	0.838
Substance Abuse (SUB)	0.036	1	306	0.850
Negative Peer Influence (NPI)	0.261	1	306	0.609
Aggression (AGG)	2.383	1	306	0.124
Family Problems (FML)	5.223	1	306	0.023*
Interpersonal Passivity (IPP)	0.032	1	306	0.858
Social Avoidance (SAV)	1.183	1	306	0.278
Shyness (SHY)	0.228	1	306	0.634
Disaffiliativeness (DSF)	0.050	1	306	0.823
Aggressiveness-Revised (AGGR-r)	0.587	1	306	0.444
Psychoticism-Revised (PSYC-r)	0.122	1	306	0.727
Disconstraint-Revised (DISC-r)	0.036	1	306	0.849

Negative Emotionality/ Neuroticism-Revised (NEGE-r)	2.692	1	306	0.102
Introversion/Low Positive Emotionality-Revised (INTR-r)	0.294	1	306	0.588

* = $p<.05$, ** = $p<.01$, *** = $p<.001$

Table A4.

Levene Test Results for One-Way MANOVA for MMPI-A-RF Clinical Scales Between Male and Female Groups Among Juvenile Youth (log10)

MMPI-A-RF Clinical Scale	*F*	*df*1	*df2*	*p*-value
Emotional/Internalizing Dysfunction (EID)	3.387	1	306	0.067
Thought Dysfunction (THD)	0.240	1	306	0.625
Behavioral/Externalizing Dysfunction (BXD)	3.936	1	306	0.048*
Demoralization (RCd)	2.755	1	306	0.098
Somatic Complaints (RC1)	3.527	1	306	0.061
Low Positive Emotions (RC2)	0.051	1	306	0.821
Cynicism (RC3)	0.094	1	306	0.759
Antisocial Behavior (RC4)	0.320	1	306	0.572
Ideas of Persecution (RC6)	0.462	1	306	0.497
Dysfunctional Negative Emotions (RC7)	3.172	1	306	0.076
Aberrant Experiences (RC8)	0.952	1	306	0.330
Hypomanic Activation (RC9)	0.790	1	306	0.375
Malaise (MLS)	0.011	1	306	0.916
Gastrointestinal Complaints (GIC)	12.669	1	306	0.000***
Head Pain Complaints (HPC)	2.006	1	306	0.158
Neurological Complaints (NUC)	3.089	1	306	0.080
Cognitive Complaints (COG)	0.412	1	306	0.521
Helplessness/Hopelessness (HLP)	0.460	1	306	0.498
Self-Doubt (SFD)	2.849	1	306	0.092
Inefficacy (NFC)	0.934	1	306	0.335
Obsessions/Compulsions (OCS)	2.584	1	306	0.109
Stress/Worry (STW)	3.830	1	306	0.051
Anxiety (AXY)	7.408	1	306	0.007**
Anger Proneness (ANP)	0.814	1	306	0.368
Behavior-Restricting Fears (BRF)	12.727	1	306	0.000***
Specific Fears (SPF)	2.119	1	306	0.146
Negative School Attitudes (NSA)	0.052	1	306	0.820
Antisocial Attitudes (ASA)	0.865	1	306	0.353
Conduct Problems (CNP)	0.203	1	306	0.653
Substance Abuse (SUB)	0.288	1	306	0.592
Negative Peer Influence (NPI)	1.900	1	306	0.169
Aggression (AGG)	0.503	1	306	0.479
Family Problems (FML)	9.265	1	306	0.003**
Interpersonal Passivity (IPP)	2.291	1	306	0.131
Social Avoidance (SAV)	0.002	1	306	0.962
Shyness (SHY)	0.032	1	306	0.858
Disaffiliativeness (DSF)	0.055	1	306	0.814
Aggressiveness-Revised (AGGR-r)	0.066	1	306	0.797
Psychoticism-Revised (PSYC-r)	0.022	1	306	0.882
Disconstraint-Revised (DISC-r)	1.040	1	306	0.309

Negative Emotionality/ Neuroticism-Revised (NEGE-r)	11.932	1	306	0.001***
Introversion/Low Positive Emotionality-Revised (INTR-r)	2.436	1	306	0.120

* = $p<.05$, ** = $p<.01$, *** = $p<.001$

Table A5.

Descriptive Statistics for all MMPI-A-RF Clinical Scales for Total Sample

Total sample (N = 308)	*M*	*SD*	Skewness	Kurtosis
Emotional/Internalizing Dysfunction (EID)	49.13	11.532	0.895	0.461
Thought Dysfunction (THD)	54.19	11.450	0.719	0.475
Behavioral/Externalizing Dysfunction (BXD)	56.40	10.476	0.439	-0.038
Demoralization (RCd)	49.50	11.742	0.849	0.369
Somatic Complaints (RC1)	52.18	10.339	1.036	1.316
Low Positive Emotions (RC2)	49.92	10.126	0.831	0.516
Cynicism (RC3)	55.21	10.898	0.463	-0.615
Antisocial Behavior (RC4)	61.21	10.051	0.653	-0.128
Ideas of Persecution (RC6)	54.78	11.522	0.502	-0.088
Dysfunctional Negative Emotions (RC7)	48.48	10.095	0.808	0.512
Aberrant Experiences (RC8)	51.45	11.798	1.334	1.738
Hypomanic Activation (RC9)	46.21	9.054	0.988	1.394
Malaise (MLS)	48.28	10.461	1.031	0.931
Gastrointestinal Complaints (GIC)	50.65	10.593	1.413	0.934
Head Pain Complaints (HPC)	49.64	9.505	1.042	0.765
Neurological Complaints (NUC)	52.33	11.421	0.819	0.380
Cognitive Complaints (COG)	53.44	11.518	0.671	-0.109
Helplessness/Hopelessness (HLP)	51.24	12.025	1.027	0.814
Self-Doubt (SFD)	47.00	10.059	1.087	0.914
Inefficacy (NFC)	49.10	9.463	0.876	0.334
Obsessions/Compulsions (OCS)	50.06	11.295	0.950	0.452
Stress/Worry (STW)	49.48	10.379	0.900	0.326
Anxiety (AXY)	51.10	11.163	1.090	0.664
Anger Proneness (ANP)	52.46	11.103	0.477	-0.534
Behavior-Restricting Fears (BRF)	54.00	12.789	0.861	-0.325
Specific Fears (SPF)	51.32	9.422	0.756	0.202
Negative School Attitudes (NSA)	52.70	12.662	0.647	-0.235
Antisocial Attitudes (ASA)	51.39	10.300	0.632	-0.095
Conduct Problems (CNP)	65.23	10.227	0.096	-0.523
Substance Abuse (SUB)	50.81	11.169	1.257	0.983
Negative Peer Influence (NPI)	55.69	11.918	0.498	-0.544
Aggression (AGG)	49.31	10.826	0.790	0.588
Family Problems (FML)	48.88	10.676	0.826	0.445
Interpersonal Passivity (IPP)	49.17	10.218	1.200	1.079
Social Avoidance (SAV)	51.36	9.798	0.693	0.313
Shyness (SHY)	45.87	8.125	0.774	0.839
Disaffiliativeness (DSF)	53.25	10.876	0.994	1.041

Aggressiveness-Revised (AGGR-r)	50.39	11.953	0.663	0.202
Psychoticism-Revised (PSYC-r)	54.83	12.405	0.841	0.816
Disconstraint-Revised (DISC-r)	58.84	10.473	0.540	0.035
Negative Emotionality/ Neuroticism-Revised (NEGE-r)	48.23	10.885	1.005	1.049
Introversion/Low Positive Emotionality-Revised (INTR-r)	51.07	10.273	1.112	1.538

Table A6.

Descriptive Statistics for all MMPI-A-RF Clinical Scales for Total Sample (log10)

Total sample (N = 308)	*M*	*SD*	Skewness	Kurtosis
Emotional/Internalizing Dysfunction (EID)	1.680	0.097	0.362	-0.290
Thought Dysfunction (THD)	1.725	0.090	0.179	-0.286
Behavioral/Externalizing Dysfunction (BXD)	1.744	0.081	-0.059	-0.110
Demoralization (RCd)	1.683	0.099	0.339	-0.457
Somatic Complaints (RC1)	1.710	0.082	0.463	0.196
Low Positive Emotions (RC2)	1.690	0.085	0.356	-0.339
Cynicism (RC3)	1.734	0.085	0.113	-0.743
Antisocial Behavior (RC4)	1.781	0.069	0.314	-0.464
Ideas of Persecution (RC6)	1.729	0.091	0.004	-0.425
Dysfunctional Negative Emotions (RC7)	1.677	0.087	0.270	-0.130
Aberrant Experiences (RC8)	1.701	0.910	0.888	-0.050
Hypomanic Activation (RC9)	1.657	0.081	0.329	0.508
Malaise (MLS)	1.674	0.089	0.519	-0.127
Gastrointestinal Complaints (GIC)	1.696	0.082	1.201	0.095
Head Pain Complaints (HPC)	1.689	0.078	0.668	-0.339
Neurological Complaints (NUC)	1.709	0.091	0.349	-0.495
Cognitive Complaints (COG)	1.718	0.910	0.277	-0.770
Helplessness/Hopelessness (HLP)	1.700	0.096	0.503	-0.214
Self-Doubt (SFD)	1.663	0.087	0.601	-0.082
Inefficacy (NFC)	1.684	0.080	0.494	-0.474
Obsessions/Compulsions (OCS)	1.689	0.093	0.508	-0.447
Stress/Worry (STW)	1.686	0.087	0.435	-0.185
Anxiety (AXY)	1.700	0.088	0.706	0.363
Anger Proneness (ANP)	1.710	0.091	0.083	-0.709
Behavior-Restricting Fears (BRF)	1.721	0.097	0.598	-0.947
Specific Fears (SPF)	1.703	0.077	0.326	-0.246
Negative School Attitudes (NSA)	1.710	0.102	0.211	-0.767
Antisocial Attitudes (ASA)	1.703	0.085	0.158	-0.247
Conduct Problems (CNP)	1.809	0.069	-0.279	-0.224
Substance Abuse (SUB)	1.697	0.087	0.902	-0.139
Negative Peer Influence (NPI)	1.736	0.917	0.127	-0.827
Aggression (AGG)	1.683	0.092	0.247	-0.340
Family Problems (FML)	1.680	0.091	0.314	-0.316
Interpersonal Passivity (IPP)	1.683	0.083	0.794	-0.080
Social Avoidance (SAV)	1.703	0.081	0.226	-0.344
Shyness (SHY)	1.655	0.075	0.258	-0.043
Disaffiliativeness (DSF)	1.718	0.084	0.479	-0.150

Aggressiveness-Revised (AGGR-r)	1.691	0.101	0.073	-0.286
Psychoticism-Revised (PSYC-r)	1.729	0.095	0.285	-0.418
Disconstraint-Revised (DISC-r)	1.763	0.076	0.064	-0.083
Negative Emotionality/ Neuroticism-Revised (NEGE-r)	1.673	0.093	0.370	0.160
Introversion/Low Positive Emotionality-Revised (INTR-r)	1.700	0.083	0.500	0.377

Table A7.

Descriptive Statistics for all MMPI-A-RF Scales by Trauma Group

	Experienced Trauma *(N=133)*				No Trauma *(N=175)*			
MMPI-A-RF Clinical Scale	*M*	*SD*	Skewness	Kurtosis	*M*	*SD*	Skewness	Kurtosis
Emotional/Internalizing Dysfunction (EID)	51.35	12.27	0.710	-0.234	47.45	10.67	1.031	1.307
Thought Dysfunction (THD)	56.08	11.77	0.598	0.108	52.75	11.02	0.824	0.951
Behavioral/Externalizing Dysfunction (BXD)	57.52	10.44	0.399	-0.214	55.55	10.46	0.484	0.156
Demoralization (RCd)	51.54	12.44	0.636	-0.243	47.94	10.97	1.021	1.158
Somatic Complaints (RC1)	53.49	10.22	0.939	1.080	51.18	10.35	1.157	1.712
Low Positive Emotions (RC2)	52.27	10.10	0.792	0.629	48.13	9.800	0.932	0.605
Cynicism (RC3)	55.14	11.30	0.420	-0.753	55.27	10.62	0.509	-0.482
Antisocial Behavior (RC4)	61.95	9.91	0.562	-0.503	60.66	10.15	0.737	0.201
Ideas of Persecution (RC6)	56.92	12.00	0.360	-0.351	53.14	10.90	0.591	0.237
Dysfunctional Negative Emotions (RC7)	49.97	10.20	0.628	0.267	47.35	9.89	0.980	0.938
Aberrant Experiences (RC8)	51.84	11.43	1.165	1.380	51.15	12.10	1.460	2.055
Hypomanic Activation (RC9)	46.66	9.41	0.780	0.248	45.87	8.79	1.176	2.618
Malaise (MLS)	51.23	11.48	0.942	0.501	46.03	9.02	0.905	0.485
Gastrointestinal Complaints (GIC)	51.35	11.68	1.349	0.539	50.11	9.69	1.414	1.110
Head Pain Complaints (HPC)	50.26	8.87	0.749	0.491	49.17	9.96	1.235	1.010
Neurological Complaints (NUC)	54.05	11.67	0.670	0.198	51.03	11.09	0.959	0.694
Cognitive Complaints (COG)	55.89	11.96	0.453	-0.432	51.57	10.84	0.851	0.377
Helplessness/Hopelessness (HLP)	52.16	12.28	0.987	0.574	50.54	11.81	1.068	1.083
Self-Doubt (SFD)	48.49	11.48	0.871	-0.090	45.86	8.69	1.175	2.027
Inefficacy (NFC)	50.08	9.96	0.698	-0.164	48.35	9.02	1.027	0.917
Obsessions/Compulsions (OCS)	51.92	11.97	0.819	0.067	48.65	10.57	1.042	0.830
Stress/Worry (STW)	50.39	11.45	0.746	-0.232	48.79	9.46	1.005	0.896
Anxiety (AXY)	52.42	11.86	1.018	0.442	50.09	10.53	1.127	0.791

Anger Proneness (ANP)	53.70	11.05	0.259	-0.713	51.53	11.09	0.657	-0.262
Behavior-Restricting Fears (BRF)	54.35	13.37	0.924	-0.234	53.73	12.36	0.796	-0.455
Specific Fears (SPF)	52.00	9.25	0.655	0.046	50.81	9.55	0.850	0.398
Negative School Attitudes (NSA)	54.96	12.70	0.460	-0.493	50.98	12.39	0.827	0.171
Antisocial Attitudes (ASA)	50.65	10.14	0.777	0.120	51.95	10.42	0.533	-0.176
Conduct Problems (CNP)	67.08	10.10	-0.087	-0.438	63.82	10.13	0.242	-0.428
Substance Abuse (SUB)	50.53	11.14	1.308	1.070	51.03	11.22	1.230	0.987
Negative Peer Influence (NPI)	55.32	11.36	0.377	-0.734	55.97	12.35	0.560	-0.479
Aggression (AGG)	51.16	11.78	0.700	0.239	47.91	9.85	0.767	0.720
Family Problems (FML)	51.26	12.05	0.679	-0.186	47.06	9.13	0.711	0.529
Interpersonal Passivity (IPP)	50.42	10.90	1.074	0.610	48.21	9.59	1.294	1.546
Social Avoidance (SAV)	52.53	10.41	0.615	0.025	50.48	9.24	0.723	0.567
Shyness (SHY)	47.34	8.48	1.053	1.273	44.76	7.69	0.458	-0.123
Disaffiliativeness (DSF)	53.77	10.80	0.937	0.810	52.85	10.94	1.051	1.297
Aggressiveness-Revised (AGGR-r)	52.56	12.78	0.591	-0.056	48.74	11.04	0.644	0.293
Psychoticism-Revised (PSYC-r)	55.65	12.40	0.749	0.624	54.21	12.41	0.927	1.066
Disconstraint-Revised (DISC-r)	59.87	10.38	0.389	-0.493	58.06	10.51	0.670	0.539
Negative Emotionality/ Neuroticism-Revised (NEGE-r)	49.65	11.76	0.860	0.501	47.16	10.08	1.098	1.620
Introversion/Low Positive Emotionality- Revised (INTR-r)	53.02	10.88	1.031	0.946	49.58	9.56	1.159	2.185

Table A8.

Descriptive Statistics for all MMPI-A-RF Scales by Trauma Group (log 10)

	Experienced Trauma *(N=133)*				No Trauma *(N=175)*			
MMPI-A-RF Clinical Scale	*M*	*SD*	Skewness	Kurtosis	*M*	*SD*	Skewness	Kurtosis
Emotional/Internalizing Dysfunction (EID)	1.682	0.100	0.273	-0.618	1.666	0.093	0.400	0.039
Thought Dysfunction (THD)	1.740	0.090	0.098	-0.384	1.713	.088	0.238	-0.133
Behavioral/Externalizing Dysfunction (BXD)	1.753	0.079	-0.046	-0.278	1.737	0.082	-0.054	0.015
Demoralization (RCd)	1.700	0.102	0.186	-0.708	1.670	0.094	0.435	-0.143
Somatic Complaints (RC1)	1.721	0.080	0.344	0.384	1.701	0.082	0.585	0.232
Low Positive Emotions (RC2)	1.711	0.081	0.281	-0.127	1.674	0.084	0.488	-0.325
Cynicism (RC3)	1.733	0.088	0.103	-0.957	1.735	0.082	0.129	-0.536
Antisocial Behavior (RC4)	1.787	0.068	0.298	-0.792	1.777	0.005	0.344	-0.225
Ideas of Persecution (RC6)	1.746	0.092	-0.114	-0.467	1.717	0.088	0.063	-0.305
Dysfunctional Negative Emotions (RC7)	1.690	0.087	0.108	-0.271	1.667	0.086	0.404	0.184
Aberrant Experiences (RC8)	1.705	0.089	0.734	-0.327	1.698	0.092	1.009	0.199
Hypomanic Activation (RC9)	1.661	0.085	0.293	-0.135	1.654	0.079	0.351	1.167
Malaise (MLS)	1.700	0.092	0.461	-0.266	1.655	0.081	0.473	-0.271
Gastrointestinal Complaints (GIC)	1.701	0.088	1.169	-0.106	1.693	0.076	1.191	0.136
Head Pain Complaints (HPC)	1.695	0.074	0.366	-0.597	1.684	0.081	0.882	-0.074
Neurological Complaints (NUC)	1.723	0.092	0.185	-0.526	1.698	0.089	0.485	-0.346
Cognitive Complaints (COG)	1.738	0.092	0.063	-0.836	1.703	0.087	0.436	-0.573
Helplessness/Hopelessness (HLP)	1.706	0.096	0.505	-0.309	1.693	0.095	0.509	-0.117
Self-Doubt (SFD)	1.674	0.097	0.497	-0.645	1.654	0.078	0.569	0.398
Inefficacy (NFC)	1.692	0.084	0.355	-0.767	1.678	0.077	0.599	-0.148
Obsessions/Compulsions (OCS)	1.705	0.096	0.388	-0.577	1.678	0.089	0.589	-0.308
Stress/Worry (STW)	1.692	0.095	0.327	-0.521	1.681	0.080	0.498	0.135
Anxiety (AXY)	1.709	0.092	0.626	-0.452	1.691	0.085	0.760	-0.310

Anger Proneness (ANP)	1.721	0.090	-0.116	-0.766	1.702	0.091	0.236	-0.555
Behavior-Restricting Fears (BRF)	1.723	0.100	0.649	-0.853	1.720	0.095	0.552	-1.051
Specific Fears (SPF)	1.709	0.075	0.246	-0.333	1.699	0.784	0.400	-0.132
Negative School Attitudes (NSA)	1.723	0.100	0.029	-0.749	1.695	0.101	0.370	-0.642
Antisocial Attitudes (ASA)	1.696	0.084	0.313	-0.173	1.707	0.086	0.043	-0.224
Conduct Problems (CNP)	1.822	0.068	-0.492	0.228	1.780	0.069	-0.129	-0.342
Substance Abuse (SUB)	1.680	0.087	0.966	-0.037	1.699	0.088	0.862	-0.178
Negative Peer Influence (NPI)	1.734	0.089	0.044	-0.924	1.734	0.094	0.175	-0.781
Aggression (AGG)	1.700	0.098	0.170	-0.438	1.672	0.087	0.237	-0.313
Family Problems (FML)	1.700	0.099	0.223	-0.587	1.665	0.082	0.217	-0.301
Interpersonal Passivity (IPP)	1.693	0.088	0.685	-0.317	1.676	0.080	0.871	0.141
Social Avoidance (SAV)	1.712	0.084	0.172	-0.479	1.696	0.077	0.237	-0.222
Shyness (SHY)	1.669	0.734	0.525	0.378	1.645	0.074	0.077	-0.585
Disaffiliativeness (DSF)	1.722	0.083	0.438	-0.150	1.715	0.085	0.520	-0.106
Aggressiveness-Revised (AGGR-r)	1.708	0.105	0.004	-0.256	1.677	0.097	0.073	-0.313
Psychoticism-Revised (PSYC-r)	1.735	0.094	0.201	-0.436	1.723	0.095	0.355	-0.354
Disconstraint-Revised (DISC-r)	1.771	0.075	0.024	-0.494	1.757	0.077	0.108	0.244
Negative Emotionality/ Neuroticism-Revised (NEGE-r)	1.685	0.99	0.275	-0.137	1.665	0.088	0.407	0.483
Introversion/Low Positive Emotionality- Revised (INTR-r)	1.716	0.084	0.479	0.232	1.688	0.079	0.499	0.534

Table A9.

Descriptive Statistics for all MMPI-A-RF Clinical Scales by Gender

	Male Offenders *(N=245)*				Female Offenders *(N=63)*			
MMPI-A-RF Clinical Scale	*M*	*SD*	Skewness	Kurtosis	*M*	*SD*	Skewness	Kurtosis
Emotional/Internalizing Dysfunction (EID)	47.44	10.42	0.943	0.946	55.70	13.28	0.447	-0.801
Thought Dysfunction (THD)	53.04	11.00	0.835	0.851	58.67	12.16	0.317	-0.002
Behavioral/Externalizing Dysfunction (BXD)	56.14	10.92	0.507	-0.042	57.43	8.559	0.088	-0.362
Demoralization (RCd)	48.09	10.75	0.855	0.580	54.98	13.75	0.503	-0.594
Somatic Complaints (RC1)	50.89	9.26	0.923	1.021	57.21	12.63	0.799	0.390
Low Positive Emotions (RC2)	49.80	10.07	0.732	0.177	50.40	10.40	1.212	1.814
Cynicism (RC3)	54.89	10.89	0.484	-0.609	56.46	10.92	0.406	-0.571
Antisocial Behavior (RC4)	61.00	10.09	0.601	-0.205	62.06	9.93	0.910	0.214
Ideas of Persecution (RC6)	53.62	10.96	0.538	-0.007	59.27	12.61	0.217	-0.292
Dysfunctional Negative Emotions (RC7)	46.82	9.06	0.931	1.279	54.95	11.33	0.180	-0.536
Aberrant Experiences (RC8)	50.83	11.60	1.509	2.457	53.84	12.33	0.795	0.110
Hypomanic Activation (RC9)	45.49	8.70	1.073	1.779	49.00	9.90	0.692	0.683
Malaise (MLS)	47.21	10.02	0.995	0.877	52.41	11.19	1.135	0.665
Gastrointestinal Complaints (GIC)	49.95	9.99	1.596	1.789	53.35	12.40	0.872	- 0.826
Head Pain Complaints (HPC)	48.40	8.721	1.219	1.558	54.44	10.89	0.433	-0.502
Neurological Complaints (NUC)	51.58	10.71	0.766	0.200	55.25	13.56	0.711	0.052
Cognitive Complaints (COG)	52.28	11.01	0.752	0.125	57.92	12.42	0.330	-0.583
Helplessness/Hopelessness (HLP)	50.43	11.74	1.138	1.167	54.38	12.69	0.691	0.159
Self-Doubt (SFD)	45.87	9.35	1.195	1.496	51.38	11.52	0.656	-0.331
Inefficacy (NFC)	48.06	8.83	0.917	0.543	53.14	10.77	0.558	-0.431
Obsessions/Compulsions (OCS)	48.76	10.41	1.027	0.845	55.10	13.14	0.519	-0.594
Stress/Worry (STW)	48.16	9.54	1.003	0.878	54.62	11.88	0.410	-0.841
Anxiety (AXY)	49.92	10.19	1.194	1.282	55.68	13.47	0.585	-0.783

Anger Proneness (ANP)	50.82	10.64	0.691	-0.138	58.86	10.62	-0.218	-0.313
Behavior-Restricting Fears (BRF)	53.21	11.99	0.937	-0.002	57.06	15.25	0.505	-1.234
Specific Fears (SPF)	50.49	9.01	0.796	0.400	54.59	10.33	0.533	-0.370
Negative School Attitudes (NSA)	52.04	12.45	0.702	-0.085	55.27	13.26	0.450	-0.595
Antisocial Attitudes (ASA)	50.93	9.88	0.631	0.086	53.17	11.73	0.518	-0.715
Conduct Problems (CNP)	64.92	10.25	0.192	-0.481	66.41	10.15	-0.288	-0.423
Substance Abuse (SUB)	50.94	10.96	1.216	1.016	50.33	12.03	1.424	1.056
Negative Peer Influence (NPI)	55.53	11.76	0.539	-0.408	56.30	12.60	0.357	-0.942
Aggression (AGG)	48.58	10.31	0.654	0.120	52.14	12.33	0.956	0.868
Family Problems (FML)	47.05	9.01	0.584	-0.102	55.97	13.44	0.359	-0.800
Interpersonal Passivity (IPP)	49.32	10.55	1.197	1.009	48.57	8.87	1.122	1.017
Social Avoidance (SAV)	51.87	9.78	0.587	0.101	49.40	9.71	1.197	1.896
Shyness (SHY)	45.29	7.815	0.690	0.542	48.14	8.94	0.899	1.152
Disaffiliativeness (DSF)	52.77	10.72	1.012	1.138	55.13	11.36	0.949	0.873
Aggressiveness-Revised (AGGR-r)	48.95	11.34	0.648	0.211	55.98	12.69	0.605	-0.151
Psychoticism-Revised (PSYC-r)	53.94	12.31	0.962	1.213	58.29	12.28	0.495	0.089
Disconstraint-Revised (DISC-r)	58.66	10.60	0.495	-0.014	59.57	10.01	0.802	0.306
Negative Emotionality/ Neuroticism-Revised (NEGE-r)	46.46	9.35	0.948	1.750	55.13	13.49	0.467	-0.898
Introversion/Low Positive Emotionality- Revised (INTR-r)	51.19	10.49	1.019	1.223	50.59	9.45	1.603	3.632

Table A10.

Descriptive Statistics for all MMPI-A-RF Clinical Scales by Gender (log 10)

	Male Offenders *(N=245)*				Female Offenders *(N=63)*			
MMPI-A-RF Clinical Scale	*M*	*SD*	Skewness	Kurtosis	*M*	*SD*	Skewness	Kurtosis
Emotional/Internalizing Dysfunction (EID)	1.666	0.091	0.362	-0.098	1.734	0.103	0.076	-0.879
Thought Dysfunction (THD)	1.716	0.087	0.272	-0.147	1.759	0.092	-0.247	-0.093
Behavioral/Externalizing Dysfunction (BXD)	1.741	0.084	0.011	-0.198	1.754	0.066	-0.332	0.291
Demoralization (RCd)	1.672	0.093	0.338	-0.395	1.727	0.108	0.070	-0.777
Somatic Complaints (RC1)	1.700	0.076	0.403	0.099	1.748	0.093	0.243	-0.035
Low Positive Emotions (RC2)	1.689	0.085	0.294	-0.492	1.694	0.084	0.638	0.353
Cynicism (RC3)	1.731	0.085	0.140	-0.768	1.744	0.084	0.021	-0.552
Antisocial Behavior (RC4)	1.780	0.070	0.263	-0.516	1.788	0.066	0.610	-0.283
Ideas of Persecution (RC6)	1.721	0.088	-0.048	-0.402	1.763	0.095	-0.324	-0.144
Dysfunctional Negative Emotions (RC7)	1.663	0.081	0.316	0.247	1.731	0.092	-0.277	-0.356
Aberrant Experiences (RC8)	1.696	0.089	1.026	0.340	1.721	0.095	0.439	-0.910
Hypomanic Activation (RC9)	1.651	0.079	0.394	0.671	1.682	0.086	0.026	0.478
Malaise (MLS)	1.665	0.087	0.502	-0.205	1.711	0.086	0.765	-0.104
Gastrointestinal Complaints (GIC)	1.691	0.077	1.342	0.609	1.717	0.094	0.745	- 1.107
Head Pain Complaints (HPC)	1.679	0.073	0.809	0.041	1.728	0.086	0.086	-0.894
Neurological Complaints (NUC)	1.704	0.087	0.329	-0.525	1.730	0.104	0.233	-0.684
Cognitive Complaints (COG)	1.709	0.088	0.352	-0.691	1.753	0.094	- 0.067	-0.779
Helplessness/Hopelessness (HLP)	1.692	0.094	0.588	-0.013	1.724	0.099	0.202	-0.556
Self-Doubt (SFD)	1.653	0.083	0.670	0.178	1.700	0.095	0.242	-0.614
Inefficacy (NFC)	1.675	0.076	0.539	-0.407	1.717	0.086	0.190	-0.708
Obsessions/Compulsions (OCS)	1.679	0.073	0.566	-0.286	1.729	0.102	0.124	-0.852
Stress/Worry (STW)	1.675	0.082	0.480	0.138	1.727	0.094	0.065	-0.848
Anxiety (AXY)	1.690	0.082	0.771	-0.109	1.734	0.102	0.295	-1.128

Anger Proneness (ANP)	1.697	0.088	0.271	-0.525	1.762	0.083	-0.725	0.496
Behavior-Restricting Fears (BRF)	1.716	0.092	0.644	-0.777	1.742	0.113	0.330	-1.530
Specific Fears (SPF)	1.697	0.745	0.356	-0.158	1.730	0.081	0.132	-0.404
Negative School Attitudes (NSA)	1.705	0.101	0.255	-0.720	1.730	0.104	0.034	-0.828
Antisocial Attitudes (ASA)	1.699	0.083	0.129	0.115	1.716	0.94	0.143	-0.684
Conduct Problems (CNP)	1.810	0.069	-0.174	-0.349	1.817	0.070	-0.707	0.622
Substance Abuse (SUB)	1.698	0.086	0.841	-0.185	1.691	0.093	1.145	0.158
Negative Peer Influence (NPI)	1.735	0.091	0.146	-0.737	1.740	0.097	0.052	-1.101
Aggression (AGG)	1.677	0.090	0.187	-0.532	1.706	0.098	0.344	-0.024
Family Problems (FML)	1.665	0.082	0.168	-0.511	1.736	0.105	-0.062	-0.713
Interpersonal Passivity (IPP)	1.684	0.086	0.798	-0.135	1.680	0.075	0.719	0.045
Social Avoidance (SAV)	1.707	0.080	0.137	-0.417	1.686	0.080	0.613	0.427
Shyness (SHY)	1.650	0.073	0.221	-0.189	1.676	0.078	0.319	0.316
Disaffiliativeness (DSF)	1.714	0.084	0.499	-0.149	1.733	0.085	0.423	-0.041
Aggressiveness-Revised (AGGR-r)	1.678	0.099	0.072	-0.306	1.737	0.097	0.088	-0.285
Psychoticism-Revised (PSYC-r)	1.710	0.094	0.377	-0.304	1.756	0.091	-0.015	-0.422
Disconstraint-Revised (DISC-r)	1.761	0.078	0.022	-0.155	1.769	0.071	0.361	0.220
Negative Emotionality/ Neuroticism-Revised (NEGE-r)	1.659	0.084	0.214	0.484	1.729	0.105	0.157	-1.127
Introversion/Low Positive Emotionality- Revised (INTR-r)	1.701	0.085	0.430	0.171	1.697	0.074	0.882	1.748