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Empirical Support for Multidimensional Treatment Foster Care (MTFC): A Critical Review

A Dissertation

presented in partial fulfillment of requirements

for the Doctor of Philosophy degree

in the Department of Psychology

The University of Mississippi

by

JENNIFER MARIE LADNER-GRAHAM

May 2019

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ABSTRACT

Multidimensional Treatment Foster Care (MTFC), initially intended as a treatment for chronic juvenile offenders (adolescents having multiple contacts with the juvenile justice system), was designed as an alternative to placement within group facilities. MTFC allows the adolescent to remain in the community while receiving individual and family-based interventions. These interventions are dedicated to decreasing risk factors associated with offending (e.g., poor parental supervision, association with delinquent peers, poor academic performance) and increasing protective factors (e.g., effective parenting practices, healthy relationships with supportive peers, increased school involvement). MTFC has been utilized to meet the needs of a variety of populations (e.g., preschoolers, adolescents, female offenders, children in typical foster care placements) and has been used to treat multiple difficulties (e.g., recidivism, drug use, and externalizing behaviors such as aggression and property destruction). Most research concerning juvenile offenders focuses on male offenders; thus, studies specifically examining the use of MTFC with female offenders are notable. Although MTFC is cited as an effective intervention, research has yielded inconsistent results regarding its effectiveness. The goal of the current study was to systematically and critically review the MTFC literature to develop hypotheses as to why some treatment studies suggest MTFC is an effective treatment for juvenile offenders while other studies find differing results. More specifically, the goal was to examine whether or not study variables (participants, intervention details, comparators, outcomes, study methodology) were associated with more positive or negative outcomes. Multiple databases were

searched to identify relevant studies. Articles meeting criteria were examined and relevant information related to participants, intervention, comparators, outcomes, and study methodology was recorded. Initial database search procedures yielded over 14,000 articles. A total of 500 abstracts were reviewed during the database search, 65 abstracts were reviewed from the MTFC website, 300 potentially relevant citations were identified via review articles, and 15 authors were contacted resulting in 10 additional studies being obtained for review. After full review, 12 studies were retained that represented nine data sets. Due to the nature of the results, the primary analysis was qualitative consisting of a critical examination of study variables in relation to effect sizes. Results indicated there were large inconsistencies among the variables analyzed. Due to the large variability, clear conclusions could not be drawn regarding which variables are associated with more positive or negative outcomes. The current data did not indicate MTFC works any differently with male juvenile offenders than with female juvenile offenders, potentially supporting the claim that MTFC is equally effective for males and females. Potential reasons for the large variability among studies and the larger clinical implications of the results are discussed with an emphasis on the implications for effectiveness research. Potential solutions to these difficulties are offered and directions for future research are suggested.

DEDICATION

This dissertation is dedicated to my family and friends. Especially to my parents, who have supported me unconditionally every step of the way; and to my husband and children, who have shared in my struggles as well as my success. Thank you.

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CHAPTER 1: INTRODUCTION

According to the most recent Juvenile Court Statistics, 1,058,500 cases of delinquency involving juvenile offenders were handled by juvenile courts during the year 2013. Moreover, more than 31 million youth were under juvenile court jurisdiction, indicating juvenile crime is an area requiring significant attention (Hockenberry & Puzzanchera, 2015). To successfully address a problem, the problem must first be defined and understood. This task has proven to be difficult in the case of juvenile delinquency due in part to the complex nature of adolescent offending.

“Juvenile offender” and “juvenile delinquent” are broad terms used to refer to an adolescent who has had contact with the legal system. Adolescence is the period between childhood and adulthood. The specific age of adolescence is culturally defined and in the United States, this age range is typically 12 years of age to 18 years of age (Coon & Mitterer, 2016). However, classifying a juvenile offender within the legal system is surprisingly complex. With regard to the legal system, age is not the sole consideration when determining juvenile offender status. Not all adolescents who have contact with the legal system will be classified as juvenile offenders. The guidelines for whether a person is adjudicated by the court as a juvenile offender vary from state to state (National Research Council, 2013; Office of Juvenile Justice and Delinquency Prevention, 2015).

During 2013, the majority of juveniles under youth court jurisdiction (79%) were 10 – 15 years of age (Hockenberry & Puzzanchera, 2015). According to the Office of Juvenile Justice and Delinquency Prevention (OJJDP) Statistical Briefing Book the maximum age at which a person can be adjudicated (ruled by the court) as a juvenile offender ranges from 15 years of age

to 17 years of age (OJJDP, 2015). Many states do not provide a minimum age for adjudication. States providing a minimum age for adjudication exhibit variations with the minimum age ranging from six to 10 years of age (OJJDP, 2015). While age is a primary factor in determining whether a person is considered a juvenile offender, many states also consider other factors such as type of offense (e.g., status offense, murder, etc.) and whether the person has a prior legal history (OJJDP, 2015). Whether a person continues to be categorized as a juvenile offender is dependent on additional rules, which also vary by state. For example, depending on the state, various individuals involved in the criminal justice process, such as the prosecutor or presiding judge, may transfer a juvenile offender to adult court at various points. Similarly, some states have provisions allowing an individual placed in the adult court system to transfer to the juvenile justice system (McCarter & Bridges, 2011; National Research Council, 2013).

Over the course of the last 10 years, the number of cases handled by the juvenile court system has decreased; however, juvenile crime remains a significant problem (Hockenberry & Puzzanchera, 2015). During 2012, individuals under the age of 18 accounted for 10.8% of all arrests in the United States (Puzzanchera & Kang, 2014). In terms of specific types of crimes, individuals under the age of 18 accounted for 11.7% of violent crimes (e.g., murder, non-negligent manslaughter, forcible rape, robbery, and aggravated assault) and 17.9% of property crimes (e.g., burglary, larceny-theft, motor vehicle theft, and arson). In 2014, a slight decrease occurred as juveniles accounted for 9.1% of all arrests (Federal Bureau of Investigation, 2015). While a decrease in juvenile crime is promising the statistics are still concerning.

Juvenile Offenders

Juvenile offenders differ from adults in a variety of ways, placing them at a disadvantage when compared to adults in terms of the criminal justice system. This is why a separate court

system was created for adolescents (National Research Council, 2013). Due to their age, adolescents may be arrested for offenses that adults cannot be. Adolescents also have less control over their environment as compared to adults and are less mature physically and cognitively.

In addition to crimes for which all individuals may be arrested, adolescents may be arrested for additional crimes solely due to their age. An offense not considered a crime if the individual is of legal age is known as a status offense. Examples of status offenses include running away from home, violating curfew ordinances, truancy (missing school consistently), incorrigibility/ungovernability (consistently disobeying parents or legal guardians) and alcohol or tobacco use. Such activities are illegal for those under the age of 18 (Hockenberry & Puzanchera, 2015; National Research Council, 2013). In some states status offenses are distinguished from criminal offenses, with criminal offenses referred to as delinquency (Siegel & Welsh, 2015). Many times a status offense is considered a less severe violation, and therefore the individual may receive less intense forms of supervision and/or interventions. States vary in their use of this distinction and sometimes the treatment/intervention for the offender is the same regardless of the type of offense (Siegel & Welsh, 2015).

Status offenses are not the only variable that makes juvenile offenders (or adolescents in general) a unique population. One obvious difference is that adolescents have less control over their environment than adults do. For example, the majority of adolescents live with their parents and exert almost no control over many of the risk factors shown to contribute to juvenile crime, including their parents' marital status, their parents' parenting styles, their parents' mental health, where he or she lives (e.g., impoverished or high crime neighborhoods), and low socio-economic status (Woolard & Fountain, 2016). As such, adolescents are less likely to be able to avoid or remove themselves from potentially unhealthy or harmful situations. In addition,

adolescents have less life experience compared to adults, which means adolescents face situations with less colloquial knowledge to draw from (Shulman & Steinberg, 2016).

Further, an adolescent's cognitive abilities are not as maturely developed as those of adults. For example, adolescents have less impulse control, greater difficulty thinking about the future, and are less able to engage in weighing the risks and rewards associated with a particular outcome (Shulman & Steinberg, 2016). To make matters more complicated, adolescents are less able to utilize their cognitive skills in times of stress or when experiencing emotional arousal (Shulman & Steinberg, 2016; Somerville, Fani, & McClure-Tone, 2011).

Significant hormonal changes are typically experienced during adolescence and often contribute to increased emotional arousal and engagement in risky behavior (Braams, van Duijvenvoorde, Anna, Peper, & Crone, 2015). Adolescence is also a time when peer relationships gain more importance and research indicates adolescents are more susceptible to peer influence than are adults (Albert, Chein, & Steinberg, 2013; Shulman & Steinberg, 2016). When considering the variables of increased hormone production and peer pressure, it is reasonable to assume adolescents who may have relatively mature cognitive abilities may have difficulty using those abilities when needed most. Essentially, all of the factors mentioned above combine to create an environment conducive to engagement in risk-taking behaviors.

Imaging studies from the field of behavioral neuroscience support these conclusions. Many areas of the brain continue to develop well past the adolescent period and into the early 20s (Bonnie & Scott, 2013; Dumontheil, 2016; Hwang, Velanova, & Luna, 2010; Luna, 2018). Examples of such areas of the brain include the prefrontal cortex, which is responsible for planning, impulse control, and decision-making, and areas within the limbic system, which are responsible for emotional arousal, sensation seeking, and reward-driven behavior (Bonnie &

Scott, 2013; Luna & Wright, 2016). Research findings lend support to the idea that adolescents are more prone to engage in risky activities (such as criminal activity), are less able to consider the long-term consequences of their actions, are more likely to engage in reward-driven or sensation-seeking behavior, and are more amenable to peer influences (Bonnie & Scott, 2013; Dumontheil, 2016; Steinberg, 2013). The juvenile justice system has acknowledged these findings. In the 2012 case of *Miller v. Alabama* the United States Supreme Court ruled states may not mandate life without parole for persons under the age of 18, regardless of the type of offense the person has committed. The court's decision was based partially on behavioral neuroscience data indicating adolescent brains are not fully developed and therefore adolescents lack full decision-making capacity (Steinberg, 2013).

Female Offenders

Although juvenile offenders as a whole pose unique challenges to the legal system, it is important to consider the ways in which gender creates additional concerns. The term "juvenile offender" is often associated with male offenders and much of the research on crime, theories of crime, and treatment are based on the male offender (Cauffman, 2008; Chesney-Lind & Pasko, 2013; Leve, Chamberlain, & Kim, 2015; Zahn, Hawkins, Chiancone, & Whitworth, 2008). The overwhelming majority of research on juvenile offenders involves males, to the extent that almost all widely accepted theories of crime and treatment are developed for the male offender. In this way, female offenders are largely ignored by the research community. Considering the number of delinquency cases involving females increased by 31% between 1985 and 2013, and in 2013 28% of cases handled by juvenile courts involved female offenders, the lack of research involving female offenders is concerning, representing a significant deficit in our understanding of juvenile offenders (Hockenberry & Puzanchera, 2015).

Current research on female juvenile offenders, while still small in comparison to studies of male juvenile offenders, aims to understand the unique role gender may play in juvenile offending. For example, female juvenile offenders and male juvenile offenders differ in the types of offenses committed. Females are more likely than males to be arrested for status offenses and to be adjudicated as status offenders (Steinke & Martin, 2014; Thompson & Morris, 2013). For instance, in a sample of 3,287 juvenile offenders, 18.2% of females were charged with a status offense compared to 8.5% of males (Thompson & Morris, 2013). In addition, female offenders tend to commit less severe crimes (e.g., probation violations, status offenses), are less likely to be arrested for felony offenses, and commit fewer offenses as compared to their male counterparts (Feierman & Ford, 2016; Thompson & Morris, 2013).

Due to this pattern, female offenders are substantially less likely than male offenders to be categorized as serious offenders (having committed a felony offense), violent offenders (having committed a felony offense against a person or having a weapon/firearm charge), or chronic offenders (having a history of four or more official referrals to the court system). Alternatively, males are twice as likely as females to fit into one of these categories (Baglivio, Jackowski, Greenwald, & Howell, 2014). Male offenders are 2.5 times more likely than females to report gang affiliation, and male offenders are typically younger when committing their first offense (Baglivio et al., 2014). While Baglivio and colleagues (2014) found females were less likely to be re-arrested for future crimes as compared to males (41.1% of males, 22.5% of females, $N = 34,497$), research shows long-term consequences of female offending may be greater than those of male offenders. This is particularly the case since female offending is more likely to be passed on to future generations (Cauffman, 2008).

Risk and Protective Factors for Juvenile Offending

The information presented thus far explains why adolescence is a period characterized by increased engagement in risky behaviors. However, this does not explain why the majority of adolescents do not encounter the juvenile justice system (National Research Council, 2013). To understand the context of juvenile offending other correlates to offending have been examined. Identification of risk factors related to offending is vital, as is determining which factors reduce the risk of offending. Aside from demographic variables, other risk factors associated with juvenile offending are typically categorized into five domains: individual, family, peer, school, and community (Developmental Services Group, 2015b).

While most research remains focused on assessing the impact of risk factors on juvenile offending, many researchers have adopted a focus with respect to protective factors (Developmental Services Group, 2015a). Protective factors reduce the impact of risk factors and/or enhance an individual's ability to effectively deal with difficulties, resulting in a lower likelihood of offending (Developmental Services Group, 2015a). Protective factors serve to decrease an individual's risk of offending by serving as a buffer (or protection) against the negative effects of risk factors. Like risk factors, protective factors are often presented in terms of five categories: individual, family, peer, school, and community (Developmental Services Group, 2015a, 2015b). Risk and protective factors often work opposite of each other with a single variable identified as both a risk and protective factor. To clarify, high levels of one variable may lead to a higher likelihood of arrest whereas low levels of the same variable may make an individual less likely to have contact with the juvenile justice system and vice versa. Considering this information, risk and protective factors are presented together.

Several demographic variables are correlated with delinquent behavior. For example, individuals who are male, Black, or come from families who have a low socioeconomic status (SES) are more likely to be referred to the court system for delinquent behavior than are other groups (Green, Gesten, Greenwald, & Salcedo, 2008; Hockenberry & Puzzanchera, 2015; Steinke & Martin, 2014). Of these variables, Green and colleagues (2008) found SES was the strongest predictor of delinquent behavior. This is not surprising considering many other identified risk factors for juvenile offending behavior are associated with low SES (e.g., single parent homes, limited parental supervision, limited educational and intellectual development, minority status, etc.).

Individual risk factors for offending include antisocial behavior (gang involvement, rebelliousness); early onset of substance use (before age 15); aggression; being the victim of abuse or otherwise being exposed to violence; and cognitive, neurological, or behavioral difficulties (learning disability, Attention-Deficit/Hyperactivity Disorder, low intelligence, traumatic brain injury) (Developmental Services Group, 2015b). As an example, individuals who experience mental health difficulties are over-represented in the juvenile justice system and face greater challenges. Nagel, Guarnera, and Reppucci (2016) summarized the results from eight research studies conducted from 2003 to 2012 examining prevalence rates of mental health issues in adolescents. When compared to community samples, juvenile offenders involved with the justice system were more likely to be diagnosed with a mental health problem (67%-81% of juvenile offenders versus 13%-28% of adolescents in the community).

Having an emotional disability was a significant predictor of recidivism, or continued delinquent behavior following the person's initial arrest (Thompson & Morris, 2013). Moreover, having a mental health diagnosis involving impulse control or aggression is one of the strongest

predictors of recidivism, having been supported in multiple studies (Barrett, Ju, Katsiyannis, & Zhang, 2015; Barrett & Katsiyannis, 2015). Alternatively, individual protective factors include having high expectations (a sense of purpose, a future orientation); an easy or resilient temperament (low levels of irritability and impulsivity); social competence (being outgoing, use of communication skills); problem-solving skills (high intelligence, use of conflict resolution skills); commitment to school and community (planning for college, involvement in meaningful activities); and involvement in organized religious activities (attending church, religious identity) (Developmental Services Group, 2015a; Mahler, Fine, Frick, Steinberg, & Cauffman, 2018).

Family-related risk factors encompass family structure, support, and functioning, as well as family history and parental behavior. Family risk factors include family history of criminal behavior (parental drug/alcohol abuse, incarcerated parents, parents with prior arrests/criminal histories); poor parental involvement and supervision; poor family attachment (death of a parent, single-parent homes); child maltreatment (abuse, neglect); high levels of family conflict (divorce, domestic violence); siblings who demonstrate antisocial behavior; parental use of harsh discipline (physical punishment, inconsistent discipline); and a low level of parental educational attainment (less than 12 years of school) (Developmental Services Group, 2015b; Malvaso, Delfabbro, Day, & Nobes, 2018). Family-related protective factors include effective parenting (clear rules, consistent and fair discipline, supervision, high expectations); positive parenting (parental love and support, responsiveness); healthy relationships with parents and family (connectedness to parents, family cohesion, parental presence, quality of the parent's marriage); having an intact family (married parents); and prosocial family involvement (family activities) (Developmental Services Group, 2015a; Kim, 2016).

For example, having a parent convicted of a crime is a predictor of juvenile offending (Barrett et al., 2015; Farrington, Ttofi, & Piquero, 2016). Additionally, after controlling for demographic variables, family conflict was positively associated with juvenile delinquency whereas family cohesion and parental efficacy were negatively associated with delinquency (Meldrum, Connolly, Flexon, & Guerette, 2016). Similarly, offending is associated with parent-child conflict and low levels of parental supervision (Aston, 2015) whereas high levels of parental supervision serve as a protective factor (Farrington et al., 2016). Furthermore, dual involvement in both the juvenile court system and the child protective system increases the risk for future offending (Lee & Villagrana, 2015; Thompson & Morris, 2013).

Peer-related risk factors are risk factors based on the peer group the individual associates with and include gang involvement or membership; alcohol or drug use by friends; and associations with aggressive or delinquent peers (Developmental Services Group, 2015b). Research indicates earlier exposure to delinquent peers increases the risk associated with engaging in delinquent behavior (Developmental Services Group, 2015b; Kim, 2016). In a study involving 549 adolescent twins and triplets, association with deviant peers was associated with greater levels of delinquency when controlling for genetic and shared environmental factors (Mann et al., 2016). On the other hand, positive peer relationships such as healthy relationships with peers (supportive friends, non-delinquent peer associations); involvement with positive peer group activities (prosocial activities, extracurricular activities at school, healthy leisure activities); and positive peer role models (friends with positive attitudes, friends with good grades, parental approval of friends) serve as protective factors (Developmental Services Group, 2015a; Smith, Faulk, & Sizer, 2016).

School-related risk factors relate to the individual's school functioning and include poor academic achievement; academic failure; negative attitude towards school (few academic goals); low commitment to school; behavioral difficulties at school; low parental expectations regarding school performance; inadequate school environment (exposure to violence, bullying, distrust of teachers, poor physical environment); and school dropout (Cornell & Heilbrun, 2016; Developmental Services Group, 2015b; Robertson & Walker, 2018). Contrarily, school-related protective factors include high academic expectations (college expectations, availability of scholarships); expectations of behavior and responsibility; above average academic skills (high GPA, high scores on standardized tests); high-quality schools (enforced policies and rules, anti-violence and drug-free policies); opportunities for school involvement (class activities, extracurricular activities and organizations, rewards for positive engagement); and positive attachment and attitude towards school (feelings of connectedness to school, attachment to teachers, use of classroom management strategies, positive morale) (Cornell & Heilbrun, 2016; Developmental Services Group, 2015a; Kim, 2016). For example, school suspension is associated with increased risk of school failure, dropping out of school, and increased risk of delinquent behavior (Cornell & Heilbrun, 2016), whereas school connectedness is negatively correlated with delinquency (Bolland et al., 2016; Chen, Voisin, & Jacobson, 2016; Kim, 2016).

Community-related risk factors are associated with the individual's larger community and include the availability of alcohol, drugs, and firearms; high crime rates; community instability (a low percentage of people who own their own homes, property vacancy); economic deprivation (living below the poverty level, lack of health insurance, high rates of unemployment); and social and physical disorganization (physical deterioration of buildings/light fixtures, vandalism, feeling unsafe) (Developmental Services Group, 2015b). Alternatively, community-related

protective factors include a safe and supportive neighborhood (low crime rates, neighborhood cohesion, positive social norms); high expectations (high graduation rates, public education campaigns); presence and involvement of supportive adults (mentors, coaches, neighbors); and opportunities to engage in the community (community service opportunities, structured recreational activities) (Developmental Services Group, 2015a). For instance, after controlling for demographic variables, Chen et al. (2016) found exposure to community violence was positively correlated with engagement in delinquent behavior, whereas neighborhood cohesion was negatively associated with delinquent behavior. Similarly, Bolland et al. (2016) found a negative correlation between delinquency and community connectedness.

As illustrated, there are many risk factors for juvenile offending, and risk factors occur in a variety of contexts across a range of conditions. The impact of risk factors changes over time, further complicating matters (Developmental Services Group, 2015b). In early childhood, individual and family risk factors exert a stronger influence than other factors. As the individual moves further into the adolescent period, peer, school, and community risk factors become increasingly influential and contribute greatly to the individual's overall risk. The more risk factors an individual experiences the greater his or her overall risk for engaging in delinquent behaviors (Developmental Services Group, 2015b; Green et al., 2008; Reingle, Jennings, & Maldonado-Molina, 2012; Rhoades, Leve, Eddy, & Chamberlain, 2016).

The age of exposure to risk factors and the length of exposure are also important variables to consider. The younger an individual is when exposed to the risk factor and the longer he or she is exposed to the risk, the greater the risk for subsequent delinquent behavior (Developmental Services Group, 2015b). For instance, the younger a juvenile is at the time of his or her first offense the greater the likelihood the individual will be arrested for future crimes

(Barrett et al., 2015; Barrett & Katsiyannis, 2015). An evaluation of exposure to risk factors is what distinguishes “at-risk” youth from “high-risk” youth. “At-risk” youth are individuals who have been exposed to a risk factor, whereas “high-risk” youth are individuals who have been exposed to multiple risk factors. Frequently individuals in the “high-risk” category experience risk factors at a young age (Developmental Services Group, 2015b).

Finally, simply being in contact with the juvenile justice system can increase an adolescent’s risk for future difficulties (National Research Council, 2013; Petitclerc, Gatti, Vitaro, & Tremblay, 2013). When comparing juvenile offenders processed through the juvenile court system to those arrested but not processed, those participating in the court system were at a higher risk of future offending as adults and committed more offenses than their peers. This trend held true when participants were matched in relation to their propensity for offending via identified risk factors (Petitclerc et al., 2013). While counterintuitive on the surface, initial involvement with the court system often leads to greater supervision of the individual. The result is the individual is more likely to be arrested for minor or status offenses. When combined with a previous offense, these arrests can lead to severe sanctions for what may have been a series of relatively minor transgressions (Shulman & Steinberg, 2016).

Additionally, youth may face negative consequences because of being labeled a juvenile offender, such as threats to future academic or employment opportunities (Hoge, 2016; National Research Council, 2013). Seemingly, youth who commit less severe crimes and are considered to be at a lower risk for re-offending are those at greatest risk for negative consequences from contact with the juvenile justice system. For example, an individual who commits a status offense may come into contact with the juvenile justice system and be exposed to a peer group

consisting of youths who are engaging in antisocial behaviors, which in turn increases the youth's risk of re-offending (Hoge, 2016).

Gender Differences among Risk and Protective Factors

Female juvenile offenders face many of the same risk factors as males. However, females face additional risks, such as increased risk for sexual abuse/sexual assault, dating violence, depression, anxiety disorders, Post-Traumatic Stress Disorder (PTSD), and unplanned pregnancy/adolescent motherhood (Cauffman, 2008; Chesney-Lind & Pasko, 2013; Dierkhising et al., 2013; Feierman & Ford, 2016; Zahn et al., 2010; Zahn et al., 2008). These factors only exacerbate the existing propensity to engage in risk taking behavior all adolescents face. While victimization during childhood is a risk factor for both males and females, victimization appears to be a stronger predictor for female delinquency (Cauffman, 2008). Female juvenile offenders are more likely to have encountered physical abuse, sexual abuse, and family violence in comparison to males. Furthermore, females placed in foster care because of such exposure are two times more likely to engage in delinquent behavior and females involved with child protective services are 3.2 times more likely to engage in delinquent behavior as compared to females without service involvement (Barrett et al., 2015).

A review of 33 studies examining trauma exposure among female juvenile offenders indicated female offenders often experience multiple types of abuse (Foy, Ritchie, & Conway, 2012). The review indicated female offenders were more likely to be exposed to both family-based violence (e.g., domestic abuse, childhood physical and sexual abuse) and community violence (e.g., witnessing or directly experiencing violence/abuse outside of the family) than to either singularly. More recent studies of female juvenile offenders show similar results. Female offenders are often exposed to multiple acts of violence, including witnessing violence,

experiencing sexual violence, and experiencing violence from their caregivers (DeHart & Moran, 2015). Rates of PTSD among female offenders range from 15% to 52%, which is higher than rates found in the general population. Furthermore, the co-occurrence of additional psychological difficulties (suicidality, depression, anxiety, eating disorders, substance abuse, Conduct Disorder, Oppositional Defiant Disorder, Attention-Deficit/Hyperactivity Disorder) is the rule rather than the exception (Foy et al., 2012).

In addition to being at greater risk for victimization in general, females are also more likely to be victimized by a family member or someone with whom the individual has had a prior relationship (versus a stranger). This elevation in risk enhances the likelihood of new difficulties that might result in contact with the legal system, such as the status offense of running away from home (Feierman & Ford, 2016; Zelechowski, 2016). Female offenders are also more likely to have had at least one parent convicted of a crime and to have experienced serious drug or alcohol use (Rhoades et al., 2016). As a potential scenario, a 16-year-old female being physically abused by her mother may attempt to flee the abuse by running away from home and would then find herself being arrested for the act of running away. Such a scenario represents the complex difficulties females experiencing multiple risks often face.

Furthermore, current relationships appear to have a greater impact on whether or not a female engages in delinquent behavior (Baglivio & Jackowski, 2013). More specifically, an individual's romantic partner influences the individual's risk for offending and this risk is heavily dependent on gender. Zahn and colleagues (2010) found males and females are equally affected when their partner engages in a serious crime. However, when less serious crimes are involved females appear to be more influenced by their partner's delinquency than are males (Zahn et al., 2010; Zahn et al., 2008) and females are more strongly influenced by their romantic

partners in terms of continued criminal behavior into adulthood (Oudekerk, Burgers, & Dickon Reppucci, 2014).

Early puberty is another gender-specific risk factor. Achieving early puberty increases risk for delinquent behavior among females but not for males (Leve et al., 2015; Zahn et al., 2010; Zahn et al., 2008). Early puberty can also give rise to increased conflict between an adolescent female and her parents and can lead to increases in associations with older males (Zahn et al., 2010). This risk is heightened when the adolescent lives in a disadvantaged neighborhood and/or lives within a dysfunctional family unit (Zahn et al., 2010; Zahn et al., 2008).

Risk for recidivism is also shown to be differentiated based on gender. Female juvenile offenders are generally at a lower risk for reoffending than male juvenile offenders (Baglivio et al., 2014). However, the factors influencing recidivism vary based on gender. For example, low academic achievement is associated with increased rates of reoffending for males but not females (Thompson & Morris, 2013). Gender differences have also been found when examining the relationship between juvenile offending and future offending as an adult (Rhoades et al., 2016). For males, number of juvenile justice referrals is predictive of future arrest as an adult with every additional juvenile justice referral increasing the male offender's risk of arrest as an adult by 9% (Rhoades et al., 2016). For females, significant predictors of arrest as an adult include history of family violence, parental divorce, and cumulative childhood risk factors (experiencing multiple risk factors during childhood). Specifically, each additional childhood risk factor increases the risk of future arrest as an adult for female offenders by 21%. Additionally, experiencing family violence increases a female's risks of adult offending by two and a half times, and experiencing

parental divorce increases the likelihood of adult offending by nearly three times as compared to females who do not experience such difficulties (Rhoades et al., 2016).

The literature on risk and protective factors demonstrates how many factors across multiple environments are relevant with regard to juvenile offending. Literature also indicates factors do not always apply equally to males and females. To understand risk factors, it is useful to know risk factors are often considered with respect to two main categories, namely, static risk factors and dynamic risk factors (Developmental Services Group, 2015b; Hoge, 2016). Static risk factors cannot be changed, such as an individual's prior criminal history, demographics, or intelligence. Dynamic risk factors are amenable to change, such as the use of ineffective parenting strategies, low academic achievement, or exposure to delinquent peers (Developmental Services Group, 2015b). As such, dynamic risk factors serve as targets for the prevention and treatment of juvenile offending.

Treating Juvenile Offenders

The juvenile court system has evolved and experienced distinct periods of reform since its inception in 1899. However, at its foundation is a focus on treatment and rehabilitation which has consistently set juvenile justice apart from adult criminal court (National Research Council, 2013). The uniqueness of adolescence combined with multiple contributing risk factors across a variety of contexts (i.e., home, school, community) makes juvenile offending exceedingly difficult to treat. Any treatment designed to address juvenile offending should aim to reduce identified risk factors, increase the presence of protective factors, and do so efficiently for male and female offenders. This is a difficult task considering the large number of risk factors. Historically this has not been the case, with typical treatment consisting of out of home placement in facilities designed to house juvenile offenders, such as juvenile correctional

facilities or group homes (National Research Council, 2013). While these controlled settings solve the problem temporarily by preventing the juvenile from engaging in delinquent behavior within the community, the impact of incarceration (whether in a juvenile correctional facility or an adult prison) on juvenile offenders has been extensively researched, with results indicating incarceration is associated with a variety of negative effects (Lambie & Randell, 2013).

Literature examining the impact of incarceration on juvenile offenders indicates those who are placed in residential correctional programs exhibit high levels of recidivism, increased contact with antisocial peers, increased antisocial and aggressive behaviors, increased risk for further physical and sexual abuse by staff and other detainees, increased mental health difficulties (including suicidal ideation) and increased physical health difficulties. Furthermore, individuals in residential correctional programs demonstrate decreased contact with prosocial peers, decreased engagement in prosocial behaviors, inferior educational opportunities, and limited employment opportunities related to the stigma associated with detainment (Cruise, Morin, & Affleck, 2016; Development Services Group, 2010b; Henggeler, 2016).

Essentially, residential correctional programs appear to be increasing the risks associated with future offending while decreasing the protective factors, which is the opposite of what a treatment should aim to do. Residential facilities, whether treatment facilities, group homes, or juvenile detention centers, involve highly structured environments that may reduce an individual's ability to effectively manage his or her own time and behavior. This, in turn, may lead to further offending behaviors, and so on. In addition, the highly structured environment associated with detainment may limit an individual's ability to learn how to effectively navigate the difficulties which preceded the offending behavior (e.g., negative peer influences, poor

coping skills, etc.), making a return to the original environment exceedingly difficult (Lambie & Randell, 2013).

While incarceration has negative effects for both male and female offenders, incarceration is more detrimental for females. While detained, females are at greater risk of sexual and/or physical abuse by staff members and other residents (Feierman & Ford, 2016). Additionally, many of the treatment programs administered by juvenile justice facilities are not empirically validated for use with female offenders (Cauffman, 2008; Feierman & Ford, 2016; Zahn et al., 2008). This is an exceedingly important issue to consider because research demonstrates female and male juvenile offenders do not necessarily have the same risk factors for offending. Therefore, treatment may need to be tailored accordingly to meet the unique treatment needs of female offenders (Barrett et al., 2015; Cauffman, 2008; Chesney-Lind & Pasko, 2013; Feierman & Ford, 2016; Thompson & Morris, 2013; Zahn et al., 2010).

Additional programs have been designed to treat juvenile offending but range from being ineffective to harmful. For example, the Scared Straight programs were designed to introduce juvenile offenders to life in an adult prison and therefore “scare” them away from future offending (Finckenauer, 1982). Scared Straight programs typically involve some sort of experience within an actual prison and interaction with inmates (Petrosino, Turpin-Petrosino, Hollis-Peel, & Lavenberg, 2013). Not only have these programs proven to be ineffective, but many studies have shown the programs actually increase criminal behavior (Henggeler, 2016; Lambie & Randell, 2013; Petrosino et al., 2013). More severe punishments, such as longer incarceration periods, are also ineffective in reducing future crime for juvenile offenders (Loughran et al., 2015). Other programs, such as wilderness camps, boot camps, residential treatment centers, and mentoring programs lack standardization during implementation and have

resulted in mixed findings when examined empirically (Development Services Group, 2011b, 2011c, 2011e).

Wilderness camps are residential programs located in an outdoor setting. The programs broadly focus on physical activity, mastery of one's environment, and building interpersonal skills (Davis-Berman & Berman, 1994). The specific components of the program are not universal, with some programs adding a form of therapy into the program while others do not (Development Services Group, 2011e; Wilson & Lipsey, 2000). Mixed reviews of the effectiveness of these programs are likely the result of this lack of standardization. Boot camps are similar to wilderness camps. Boot camps may occur in an outdoor setting but subscribe to a strict military model (Wilson, MacKenzie, & Mitchell, 2005). Similar to wilderness camps, boot camps have mixed results within the literature with most studies showing little effect on offending behavior (Development Services Group, 2011e; Henggeler & Schoenwald, 1994; Wilson et al., 2005). Residential treatment centers (RTCs) also lack a standardized treatment model. RTCs are less secure than correctional facilities but typically involve 24-hour supervision, high levels of structure, and some type of treatment for residents (Development Services Group, 2011c). Due to the great variability among treatment services provided in RTCs, research on their effectiveness is also mixed (Baker, Fulmore, & Collins, 2008; Bettmann & Jaspersen, 2009; Development Services Group, 2011c).

Mentoring programs, where an adolescent is paired with a pro-social peer or adult mentor, have long been used as a way to target at-risk youth (Tolan, 2013). Like the previous interventions, variation among programs has resulted in mixed outcomes, but even the most effective programs using more structured models have resulted in small outcome effects (Development Services Group, 2011c; Tolan et al., 2013; Wood & Mayo-Wilson, 2012). Still

other programs, such as day treatment and shelter care, are being implemented in spite of a lack of empirical investigation into their effectiveness. The overall treatment outcomes of such programs are unknown (Development Services Group, 2011a, 2011d). Day treatment centers are non-residential programs providing supervision. Day treatment centers typically require the individual to check-in at designated intervals. Like other programs, many day treatment centers offer a variety of additional services, such as group therapy. The services provided, however, vary site by site (Boyle, Ragusa-Salerno, Lanterman, & Marcus, 2013; Development Services Group, 2011a). Day treatment centers are most often used with adult offenders. Empirical evaluations of their use with juvenile offenders are limited, with available studies reporting mixed findings (Development Services Group, 2011a). Shelter care programs provide non-secure residential placement for youth in need whether due to crisis or as an alternative to a secure facility. Most offer daily structure and programming (recreational activities, counseling, etc.). However, empirical evaluations of shelter care programs are rare and their effect on preventing future offending behavior is unknown (Development Services Group, 2011d).

Promising Treatments for Juvenile Offenders

As indicated above, developing effective treatment programs for treating juvenile offending is complex, proving to be a difficult enterprise. This is especially true for female offenders. Females comprise a smaller proportion of juvenile offenders and tend to commit less severe offenses. Fewer programs are generally available to females as resources are more likely to be allocated towards male offenders, who outnumber females and tend to commit the most severe offenses (Cauffman, 2008; Feierman & Ford, 2016). For these reasons, greater efforts have been made in terms of developing treatment programs and interventions for male juvenile offenders. There are fewer programs and interventions designed for female offenders and the

data as to their efficacy is significantly more limited. Considering these issues, it is vitally important to establish empirically supported treatments for juvenile offenders, and with particular regard for female juvenile offenders. While many programs have been found wanting in terms of treatment efficacy, promising programs do exist. Examples of such programs include those based on the positive youth development model and interventions incorporating cognitive-behavioral therapy (CBT) (Development Services Group, 2010a; Development Services Group, 2014b).

Established in the early 1990s, positive youth development focuses on increasing resilience and building protective factors as a means of decreasing problematic behaviors and preventing future offending (Development Services Group, 2014b; Tolan, 2016). The heart of the approach involves a focus on the potential of the adolescent to grow and change (see Damon, 2004 for a review of the approach). Programs based on the model result in interventions designed to promote resilience. The interventions of each program vary based on the specific areas targeted (e.g., social skills, community involvement, academics, etc.). A strength of the positive youth development model is the model can be further explicated to focus on the specific needs of female offenders (Clonan-Roy, Jacobs, & Nakkula, 2016). A recent meta-analysis of programs based on the model indicated positive youth development programs might be effective in increasing academic achievement and psychological adjustment. Positive youth development programs were not found to impact risky or problem behavior. Moreover, the programs appear to be more beneficial for low-risk youth than for high-risk youth (Ciocanel, Power, Eriksen, & Gillings, 2017). While the model provides a positive framework for understanding and treating juvenile offending, new research is needed to determine which specific interventions are effective (Development Services Group, 2014b).

Cognitive-behavioral therapy (CBT) is a form of psychotherapy that addresses both dysfunctional thought patterns and behavioral patterns (Beck, 1995). CBT is moderately effective in addressing delinquency and multiple individual risk factors associated with delinquency. CBT has been used with male and female offenders (Development Services Group, 2010a; Feindler & Byers, 2014; Landenberger & Lipsey, 2005). However, CBT alone does not directly address the more complicated risk factors associated with delinquency; family risk factors and peer influence for example. Therefore, CBT serves as an important component to addressing juvenile offending but not as an individual solution. Treatments demonstrating the greatest efficacy for treating juvenile offenders incorporate some form of CBT in addition to a variety of other components, including: training and supervision of program providers, involvement of the offender's family, addressing multiple risk factors across multiple contexts, high levels of structure, individualized treatment, a strengths-based approach, skill development, and opportunities to practice those skills in a real-world setting (Feindler & Byers, 2014). Community-based treatments (also commonly referred to as family-based treatments) have developed as a way to incorporate each of these necessary components in an effort to address the complex factors associated with juvenile offending.

Community-based treatments are designed to incorporate the offender's family and often include members or institutions from the community (e.g., teachers, schools, extended family, etc.) within the treatment. Community-based treatments incorporate a variety of interventions across contexts to address the complicated factors associated with juvenile offending. Three community-based treatments are consistently cited in the literature as being effective for treating juvenile offenders (Borduin, Dopp, & Taylor, 2013; Feindler & Byers, 2014; Henggeler, 2015, 2016; Kazdin, 2015; Lambie & Randell, 2013; Welsh & Greenwood, 2015). The three treatments

are Functional Family Therapy (FFT; Alexander & Parsons, 1973), Multisystemic Therapy (MST; Henggeler & Borduin, 1990), and Multidimensional Treatment Foster Care (MTFC; Chamberlain, 1990). Developers of each treatment approach have obtained copyrights to ensure treatment fidelity is maintained upon implementation (Functional Family Therapy, 2016; MST Services, 2015; TFC Consultants, 2016). Each treatment involves addressing multiple factors across multiple contexts, though each is unique in terms of approach and treatment intensity.

Of the three treatment approaches, FFT is the least intensive method. Typically, teams of three to eight therapists work with the offender and his or her family for three to four months (Henggeler, 2015). The focus of therapy is not solely on the offender's behavior as an individual, but on engaging the family unit, motivating the family to change, and identifying patterns of dysfunctional family interactions. Once identified, the dysfunctional family interactions may be replaced with interactions designed to promote the functioning of the youth and the family as a whole (Functional Family Therapy, 2016; Henggeler, 2015). Therapy involves a family systems approach and may occur in the therapist's office or in the home with an overarching goal of improving family communication. The final steps of therapy involve preparing the family to deal with future difficulties that may arise as well as connecting the family to school and community resources as needed (Henggeler, 2015; Kazdin, 2015).

MST is more intensive than FFT as MST involves a wider variety of treatment techniques, includes 24-hour access to a therapist, and operates within as many areas of the offender's life as is needed (individual, family, peer, neighborhood, community). MST is typically conducted with teams of two to four therapists for an average of four months and therapy occurs within the youth's home (Henggeler, 2015). MST identifies targets for change within the youth's life that are contributing to his or her difficulties, addressing needs with

specific interventions. For example, if marital discord between the offender's parents is preventing effective parenting, marital therapy is implemented. If the youth presents with difficulty maintaining positive peer associations the family might be connected with extracurricular activities within the community while the youth simultaneously receives social skills training (Kazdin, 2015; MST Services, 2015). MST identifies and addresses the specific needs of the youth and the associated contexts. Evidence-based interventions are administered and others within the youth's environment are incorporated into treatment as needed (Henggeler, 2015; Kazdin, 2015; MST Services, 2015).

Of the three treatment approaches, MTFC is the most intensive, lastingly approximately 6 to 9 months. The treatment team consists of various professionals with each team member serving a specific function. MTFC differs from FFT and MST in that it involves removing the adolescent offender from his or her home and placing him or her in the care of trained foster parents; concurrently providing both the youth and his or her family with needed services (family therapy, individual therapy, behavioral programming, medication management, academic support, etc.) (Henggeler, 2015; Kazdin, 2015; TFC Consultants, 2016). While each of the three treatment models have been used with male and female juvenile offenders, only MTFC has been tested via a randomized controlled study with an exclusively female population (Leve et al., 2015).

Multidimensional Treatment Foster Care (MTFC)

Dr. Patricia Chamberlain and her colleagues (TFC Consultants, 2016) originally developed Multidimensional Treatment Foster Care (MTFC) at the Oregon Social Learning Center in 1983. MTFC has also been referred to as Treatment Foster Care Oregon (TFCO) and Treatment Foster Care (TFC) (Leve et al., 2015; TFC Consultants, 2016). Initially intended as a

treatment for chronic (repeat) juvenile offenders, MTFC was designed to be an alternative to placement within group facilities (Chamberlain, 2003b; Moore, Sprenghelmeyer, & Chamberlain, 2001). As mentioned previously, group facilities are similar to facilities designed for the detention of juvenile offenders. Group facilities are secure facilities. Group facilities, however, allow the offender to have contact with the community (e.g., attend school, hold a job in the community). Moreover, group facilities typically house fewer individuals and are generally secured by staff versus being completely locked down (Development Services Group, 2014a).

MTFC presents an opportunity to address the problem of treatment generalizability often seen in group home settings. Often the adolescent would demonstrate treatment-related gains during residential treatment but treatment effects would decrease shortly after the individual left the treatment setting (Moore et al., 2001). MTFC also presents an opportunity to interrupt long-standing negative patterns of interaction between a youth and his or her parents by temporarily removing the youth from the home and then providing treatment tailored to meet the specific needs of the individual (Moore et al., 2001). MTFC has proven to be a cost-effective alternative to residential placement (Aos, Miller, & Drake, 2007; Holmes, Ward, & McDermid, 2012), and MTFC has been expanded to address a variety of populations and difficulties. MTFC has been identified as a “probably efficacious” evidence-based treatment (Eyberg, Nelson, & Boggs, 2008) and was chosen along with MST and FFT as part of the Blueprints for Violence Prevention program initiative conducted by the Center for the Study and Prevention of Violence (CSPV), now referred to as Blueprints for Healthy Youth Development (Mihalic & Irwin, 2003; TFC Consultants, 2016).

MTFC is based on the principles of social learning theory (Bandura, 1977). The basic idea behind the treatment was to create an alternative to traditional group home placement that

would limit contact with delinquent peers and increase contact with positive adult models (Chamberlain, 2003b). The three core principals of MTFC are as follows: to provide support for parents of youth (i.e., clients) involved in the MTFC program, to build a reinforcing environment for the youth involved in the MTFC program, and to maintain staff roles that are distinct, clearly stated, and supportive of the youth and the youth's engagement in the program (Chamberlain, 2003b). In 2002, the founders of MTFC created TFC Consultants, Inc. to ensure treatment fidelity for those wishing to implement MTFC (TFC Consultants, 2016).

As described in Chamberlain (2003b), MTFC involves placing an individual in a home with trained MTFC foster parents. Unlike traditional interventions, which are typically administered by a single therapist in a one-hour weekly therapy session, a treatment team administers MTFC. The team meets on a weekly basis and consists of several members, each of whom serves specific functions. The program supervisor is responsible for overall coordination of the intervention. This includes managing funding, evaluating the program, reviewing weekly data, and coordinating any additional services the adolescent may need but are not inherently part of programming, such as academic tutoring. The program supervisor is also on call 24 hours per day, 7 days per week for any needed crisis intervention.

The foster parents are one- or two-parent families responsible for the daily care of the adolescent. Foster parents receive 20 to 30 hours of pre-service training conducted by a foster parent trainer. Training includes basic principles of behavior, such as learning how to observe and identify specific behaviors, how to use praise effectively, how to set straightforward and consistent limits, and how to effectively use rewards and consequences. The foster parents are educated on a variety of issues such as developmental concerns and legal and ethical issues that might arise. Foster parents are provided additional skills training relating to the use of effective

communication, problem-solving strategies, and effectively working with other members of the treatment team (Moore et al., 2001).

Training also includes a four-step approach to analyzing behaviors and implementing behavioral programming as well as training on how to use a three-level point system for behavior management of the adolescent in their care (Chamberlain, 2003b). The point system allows the adolescent to receive points for completing developmentally appropriate tasks throughout the day (e.g., going to school, following instructions, completing homework, etc.). The foster parents provide the adolescent with daily feedback on his or her behavior. As the adolescent earns points he or she can progress through the three level system, gradually earning privileges and increased independence (Moore et al., 2001).

A family therapist is assigned to work with both the adolescent and the adolescent's biological family, or in some cases, a relative or adoptive family with whom the adolescent will eventually be placed. The family therapist conducts family therapy and serves as an after-care resource for when the youth leaves the care of the foster parents and returns to his or her family. Additionally, each youth may also be assigned an individual therapist and/or a skills therapist. The individual therapist is a psychotherapist who works with the adolescent on an individual basis to address any mental health needs (e.g., depression, anxiety, etc.). The skills therapist is certified in Applied Behavior Analysis (ABA), a research-supported behavioral treatment for a variety of difficulties, and assists the adolescent in gaining needed skills and practicing skills in real-world settings. For example, a skills therapist might have the adolescent interact with a sales person in a department store to teach him or her how to request assistance appropriately (Chamberlain, 2003b).

The final team member is a parent daily report caller. This team member is often a previous foster parent and is responsible for conducting a daily telephone interview with the foster parents to obtain information about the youth over the previous 24 hours. The information is collected via the Parent Daily Report Checklist (PDR; Chamberlain & Reid, 1987), a form specifically developed for this purpose. This process allows the parent daily report caller to monitor the foster parent's response to behavior problems and to notify necessary team members if difficulties arise (Moore et al., 2001). The information gathered is used at weekly team meetings to inform the individual treatment approach. Throughout the program, the adolescent's behavior and school performance are monitored and interventions are implemented within these domains as needed. The adolescent also participates in home visits with his or her biological or adoptive parents. The visits are initially of short duration, usually a few hours, gradually increasing to overnight and then weekend visits (Chamberlain, 2003b).

While MTFC was initially intended as a treatment for adolescents involved in the criminal justice system, the treatment has been tailored and expanded for use with a variety of populations and difficulties. MTFC has been developed into three unique programs to meet the needs of adolescents (MTFC-A, ages 12 - 17), children in middle childhood (MTFC-C, ages 7 - 11), and preschool children (MTFC-P, ages 3 - 6) (TFC Consultants, 2016). In addition to being used as a treatment for chronic juvenile offenders (Chamberlain, 1990), MTFC has been customized for the needs of female youth (Leve, Chamberlain, & Reid, 2005), youth struggling with drug addiction (Rhoades, Leve, Harold, Kim, & Chamberlain, 2014), youth leaving inpatient mental health care (Chamberlain & Reid, 1991), and pre-school children in foster care who are engaging in problematic behaviors (Fisher, Ellis, & Chamberlain, 1999).

MTFC Research

Treatment studies of MTFC have demonstrated the approach can produce desirable outcomes. For instance, an early randomized controlled study (RCT) of MTFC was conducted by one of the treatment developers (Dr. Patricia Chamberlain) with a sample of adolescent offenders (Chamberlain, 1990). Participants receiving MTFC had lower rates of further incarceration as compared to the treatment as usual group, which consisted of offenders either receiving intensive parole supervision or placement in group care or a residential treatment center (Chamberlain, 1990). Although the study only included 16 participants, at two-year follow-up the MTFC group was less likely to have been incarcerated in the state training school and, when incarcerated, spent 34% fewer days incarcerated than the treatment as usual group (Chamberlain, 1990).

Additional RCTs have yielded similar results. Chamberlain and Reid (1991) examined the use of MTFC with a sample of 20 males and females between the ages of 9 and 18 who were receiving care from a state psychiatric facility. MTFC was compared with treatment as usual, which consisted of care in a residential treatment facility, living at home with a parent or relative, or further hospitalization. Outcome measures included assessment of overall functioning via the Child Global Assessment Scale (CGAS; Shaffer et al., 1983), problem behaviors via the Parent Daily Report Checklist (PDR; Chamberlain & Reid, 1987), psychological symptoms via the Brief Symptom Inventory (BSI; Derogatis & Spencer, 1982), and social functioning via the Adolescent Problem Inventory (API; Gaffney & McFall, 1981) and/or the Taxonomy of Problematic Social Situations (TPOS; Dodge, McClaskey, & Feldman, 1985). Assessments were conducted prior to beginning treatment, three months after beginning treatment, and seven months after beginning treatment. At three months, those in the treatment condition showed a 50% reduction in reported behavioral difficulties, whereas the treatment as usual group showed

no significant change. At seven months the treatment as usual group showed a decrease in problem behaviors, though the decrease was less than that seen in the treatment group. No significant changes were seen on the other variables (Chamberlain & Reid, 1991). While the participants in this study were not juvenile offenders, the results speak to MTFC as a treatment for the problematic behaviors often exhibited by juvenile offenders.

Chamberlain and Reid (1998) compared MTFC with community-based group care (typically 6 to 15 youth per group home) in a sample of 79 male adolescent offenders between the ages of 12 and 17. Participants were considered serious and chronic offenders as all offenders had experienced at least one out of home placement, and on average each adolescent had received 14 criminal referrals with four or more being felonies. Study outcomes included number of official juvenile justice referrals and self-reported delinquency via the Elliott Behavior Checklist (EBC; Elliott, Ageton, Huizinga, Knowles, & Canter, 1983). Males in the MTFC condition were less likely to run away from their placements and more likely to complete treatment, with 73% of the MTFC group completing treatment as compared to 36% of the comparison group. Compared to group care, the MTFC treatment group spent 60% fewer days in secure facilities (detention facilities or the state training school) during the first year following treatment (Chamberlain & Reid, 1998).

After controlling for age, age at first offense, and the number of prior offenses MTFC participants received significantly fewer juvenile justice referrals and self-reported less engagement in delinquent behavior. One year after treatment, 41% of the participants in the MTFC group had not received a single juvenile justice referral as compared to 7% of the control group, and MTFC participants spent twice as much time living at home with parents or relatives. A second study, a two-year follow-up, indicated adolescents who had received MTFC obtained

fewer referrals for violent offenses (assault, kidnapping, menacing, weapons use, robbery, rape, sexual abuse, murder, attempted murder), with 5% of the MTFC group receiving two or more referrals for violent offenses as compared to 24% of the control group (Eddy, Whaley, & Chamberlain, 2004). Adolescents who received MTFC also self-reported substantially fewer acts of violent behavior (hitting, threatening, rape, using force to obtain something, attacking someone with intent to harm, engaging in gang fights) (Eddy et al., 2004).

RCT studies conducted with adolescent female offenders resulted in similar outcomes (Leve et al., 2005). Leve and colleagues (2005) conducted a study involving 81 chronic female offenders between the ages of 13 and 17. Each participant had on average 11.9 juvenile justice referrals and 70% had at least one felony offense. The experimental group received a gender specific form of MTFC, which involved an increased focus on behaviors related to social-relational aggression while the control group received community-based group care as usual. Outcome measures included the number of days in locked settings (detention or correctional facilities), number of official juvenile justice referrals, and caregiver reports of problem behaviors via the Delinquency subscale of the Child Behavior Checklist (CBCL; Achenbach, 1991) and the Elliott Self-Report of Delinquency Scale (Elliott, Huizinga, & Ageton, 1985). At one-year follow-up, the female adolescent offenders treated with MTFC demonstrated 62% fewer days spent in locked settings as compared to the control group. The MTFC group also experienced a greater decrease in the number of juvenile justice referrals as compared to the control group, with the number of referrals decreasing by 85% (as compared to baseline) for the MTFC group and 42% for the control group. Caregivers also reported fewer problematic behaviors for the MTFC group with mean CBCL scores falling in the subclinical range. Alternatively, mean scores for the control group remained in the clinical range. While both

groups reported a decrease in self-reported delinquency, the difference between the two groups was not statistically significant. A follow-up study demonstrated treatment gains were maintained at two-year follow-up (Chamberlain, Leve, & DeGarmo, 2007).

A study conducted in England examining the use of MTFC with females between the ages of 12 and 16 yielded results similar to the research conducted in the United States (Rhoades, Chamberlain, Roberts, & Leve, 2013). Participants ($N = 58$) were in need of foster care placements, were experiencing behavioral and emotional difficulties, and/or had a history of juvenile offending. Outcomes were assessed across the domains of offending, violence, substance use, risky sexual behavior, self-harm, and school activities. Each area was assessed using a single question with a rating scale indicating the frequency and/or intensity of the participant's engagement in the behavior. Assessments were conducted prior to treatment and again 12 months after the beginning of treatment (Rhoades et al., 2013). Significant improvements were observed across all domains with the exception of substance use. In an effort to compare the results of this study to previous studies, the investigators compared the effect sizes (as measured by Cohen's d) to those from the female U.S. sample previously mentioned. The effect sizes were found to be similar (Rhoades et al., 2013). Though less rigorous than the RCT approach, this study provides further evidence that MTFC is an effective treatment for female juvenile offenders.

While the studies mentioned previously were conducted primarily by the treatment developers, independent research has been conducted elsewhere. In Sweden, Westermark and colleagues (2011) compared MTFC to treatment as usual (residential care or foster care placement with concurrent home-based interventions) in a sample of 35 male and female youth between the ages of 12 and 18. Though not identified specifically as juvenile offenders, each

study participant was referred by a social service agency due to serious behavioral difficulties. Each had a prior diagnosis of Conduct Disorder based on criteria presented in the *Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition, Text Revision (DSM-IV-TR*; American Psychiatric Association, 2000). Moreover, each individual had received some sort of prior treatment and was at immediate risk of receiving out-of-home placement. The Achenbach System of Empirically Based Assessment (ASEBA) was used as the primary outcome measure, consisting of the Child Behavior Checklist (CBCL; Achenbach, 1991) and the Youth Self-Report (YSR; Achenbach & Rescorla, 2001). While each measure has two primary domains, a competence scale and a problem scale, only the problem scale was used and three different scores were derived (total score, internalizing behaviors, externalizing behaviors) for each problem area. Internalizing behaviors include behaviors such as somatic complaints and withdrawal, whereas externalizing behaviors include outward displays such as aggression towards others. The MTFC group demonstrated greater improvements than the control group in five of the six areas at two-year follow-up (externalizing behaviors and total score on the Youth Self Report, and internalizing behaviors, externalizing behaviors, and total score on the Child Behavior Checklist). In addition, the majority of youth in the MTFC condition showed a 30% or more reduction in symptoms at two-year follow-up, which was not the case for the control group (Westermarck et al., 2011).

In addition to reducing delinquency, MTFC has shown to improve a variety of other outcomes. For example, one study found adolescent females in the MTFC condition reported fewer pregnancies than those in the group care condition at two-year follow-up (Kerr, Leve, & Chamberlain, 2009). Another study reported female adolescents receiving MTFC also showed increased school attendance and increased homework completion at one-year follow-up as

compared to those receiving group care (Leve & Chamberlain, 2007). Research also demonstrates MTFC is more effective at reducing symptoms of depression and accomplishes this reduction at a greater rate when compared to group care (Harold et al., 2013). With regard to substance use, MTFC has been examined with both male and female adolescent offenders. In one study, male offenders receiving MTFC reported lower levels of drug use at 18-month follow-up as compared to those offenders receiving group care (Smith, Chamberlain, & Eddy, 2010). In a follow-up study, at two-year follow-up female offenders in the MTFC condition reported greater decreases in drug use when compared to the comparison group who received group care (Rhoades et al., 2014). Also of note, Rhoades and colleagues (2014) found females in the MTFC condition were less influenced by their intimate partner's drug use.

While MTFC has gained much research support, not all findings have been consistent. A second RCT was conducted in Sweden involving 46 males and females between the ages of 12 and 17 (Hansson & Olsson, 2012). Similar to the previous RCT, participants had a prior diagnosis of Conduct Disorder as presented in the *DSM-IV-TR*, exhibited behavioral difficulties, and were at immediate risk for out-of-home placement. MTFC was compared to treatment as usual, which consisted of residential care, foster care, or home-based services. Outcome measures were administered at baseline, one year, and two years after baseline, consisting of the total problems scale from the CBCL and the YSR. Results indicated individuals in the MTFC condition showed more improvement during the administration of the treatment. However, at two years after baseline, the majority of individuals from both groups exhibited significant improvement, with no significant differences found between the MTFC group and the treatment as usual group (Hansson & Olsson, 2012).

A treatment program in England entitled Intensive Fostering (IF) was designed to further examine how MTFC would perform when implemented independent of the treatment developers. To ensure treatment fidelity, a member of the MTFC team was consulted throughout the study (Biehal, Ellison, & Sinclair, 2011). Participants included 47 serious and chronic juvenile offenders facing out-of-home placement. The comparison condition involved placement in an intensive supervision program, an unspecified community-based program, or custody. Participants in the IF condition were evaluated one year after entering treatment and one year after exiting treatment, whereas participants in the control condition were only evaluated one time, one year after exiting treatment for those in custody or one year after beginning treatment for those not in custody. One year after entering treatment participants in the IF condition were less likely to have been re-convicted, with 39% of the IF group being re-convicted as compared to 75% of the control group. The IF group was also less likely to have been taken into custody (22% as compared to 50%), and spent 60% fewer days in custody (Biehal et al., 2011). Additionally, participants in the IF condition were responsible for fewer and less severe offenses than the comparison group. However, data collected one year after the end of treatment indicated the IF group did not significantly differ from the comparison group on rates of re-conviction or custody, suggesting gains made during treatment were not maintained once treatment ended (Biehal et al., 2011).

A more recent study conducted in England found similar results. Participants included 219 adolescents between the ages of 11 and 16 who had demonstrated emotional and behavioral difficulties and were in need of placement (Green et al., 2014). MTFC was compared to treatment as usual, which involved foster care, residential care, or residential school care. The primary outcome measures administered were the Children's Global Assessment Scale (CGAS;

Shaffer et al., 1983), the Health of the Nation Outcome Scales for Children and Adolescents (HoNOSCA; Gowers et al., 1999), the CBCL, and the YSR. Secondary outcome measures included offending, academic skills, and educational attendance. Baseline data were collected six months prior to the beginning of treatment and follow-up data were collected 12 months later. Results of the analyses showed both groups demonstrated improvement across time, though no significant differences were found between the two groups on any of the primary or secondary measures (Green et al., 2014). Due to the inconsistent findings across studies, a more comprehensive evaluation of the MTFC literature is needed.

An important way to help identify effective treatments is by summarizing the literature for a particular treatment. Researchers have attempted to do this with the MTFC literature. There have been publications summarizing findings from more than one MTFC study (Chamberlain, 2003a; Fisher & Chamberlain, 2000; Leve, Fisher, & Chamberlain, 2009). These research summaries are not comprehensive and typically only refer to the early RCT evaluations of MTFC, as the more recent treatment studies were not yet conducted. Additionally, MTFC has often been included in literature reviews of evidence-based treatments (Caldwell & Van Rybroek, 2013; Carr, 2014; Eyberg et al., 2008; Fonagy et al., 2015; Henggeler & Sheidow, 2012; Henggeler, 2015, 2016; Kazdin, 2015; Leve et al., 2012; Stewart, Leschied, Dunnen, Zalmanowitz, & Baiden, 2013; Tripodi & Bender, 2011). However, these reviews do not typically focus solely on MTFC, but rather include MTFC among a list of other evidence-based treatments, again citing the initial RCTs as support for MTFC as an effective treatment.

One systematic review of MTFC is an unpublished dissertation (Standen, 2015). This review did not examine the full range of the MTFC literature nor the use of MTFC with juvenile offenders. The review focused on answering a specific research question: whether MTFC is an

effective intervention for reducing externalizing behaviors (e.g., behaviors directed towards others or the environment such as aggression, destruction of property, or disobeying) in children who have social, emotional, and behavioral difficulties. Many MTFC studies were excluded due to not examining the variables of interest (e.g., studies where the primary outcome variable was recidivism, etc.). After the exclusion criteria were applied, five studies were included in the review (Standen, 2015).

More recently, a brief report by SBU Assessments (2018) summarized the results from a systematic review and meta-analysis of 18 articles representing eight separate studies of MTFC. The results of the meta-analysis were reported in the form of effect sizes for the various outcomes and were as follows: reduction in future criminality per records data ($d=0.393$), self-report data ($d=0.242$), and days in locked settings ($d=0.665$) as compared to residential care. Effect sizes were also reported for delinquent peer associations ($d=0.415$), drug use ($d=0.472$) and increased mental health outcomes ($d=0.348$). However, the brief report did not provide substantial information about study components (e.g., participants, interventions, or outcomes) or details related to statistical analyses, resulting in a less than comprehensive review of the treatment.

MTFC has been frequently cited in the literature as an effective and cost-efficient family-based treatment (Aos et al., 2007; Borduin et al., 2013; Carr, 2014; Fonagy et al., 2015; Henggeler, 2015). MTFC has been applied to a range of populations and difficulties, including female juvenile offenders, and has been designated an evidence-based treatment that is “probably efficacious” (Eyberg et al., 2008). MTFC is being implemented across the United States and in multiple countries (TFC Consultants, 2016). Despite MTFC being included in a number of studies and summaries, outside of a brief report completed by SBU Assessments (2018), a

systematic and critical review of the MTFC literature has not yet been published. As not all research studies have yielded uniform results and studies that are more recent in particular indicate MTFC may not be as effective as initially perceived, a critical review of the MTFC literature is warranted.

CHAPTER II: THE PROPOSED STUDY

In summary, juvenile offenders represent a unique population posing substantial challenges to the legal system. A review of risk and protective factors related to juvenile offending illustrates factors related to juvenile offending are multifaceted and occur across a variety of contexts. As such, juvenile offending is a difficult problem to address. This is especially true for female offenders who have received substantially less research attention. Research conducted on offending and gender demonstrates female offenders likely exhibit some variation concerning risk factors and treatment needs.

Many programs developed to address juvenile offending have fallen short of the goal, with some programs resulting in no treatment effects and others actually causing harm. While some programs have yielded benefits, the most promising programs involve some form of cognitive-behavior therapy in combination with addressing multiple needs of the offender and his or her family across contexts. Of the three research supported community-based programs, MTFC is the most intensive, in terms of time and requiring out-of-home placement. In addition, MTFC has been evaluated in terms of its effectiveness with female offenders. Though MTFC is considered an effective treatment for juvenile offenders by multiple sources, not all research studies have reported consistent results. Although summaries of the MTFC literature have been conducted, these studies often rely on early MTFC research. The summaries do not include studies reporting more recent and inconsistent results. A more comprehensive analysis of the MTFC literature is necessary to develop hypotheses about why studies of MTFC have yielded disparate results.

The purpose of the current study was to examine the effectiveness of MTFC. Specifically, the current study aimed to summarize and analyze the research literature on MTFC via a critical literature review. The goal of the current study was to systematically and critically review the literature on MTFC in order to develop hypotheses as to why some treatment studies suggest MTFC is an effective treatment for juvenile offenders while other studies find differing results.

Research Questions

Consistent with the guidelines set forth for formulating research questions for review studies proposed by Shamseer and colleagues (2015) and MacLure, Paudyal, and Stewart (2016), the following research questions were proposed:

1. Are differences between participants (gender, severity of difficulties, offender status, etc.) associated with differences in treatment outcomes?
2. Are differences in intervention implementation (location, length of treatment) associated with differences in treatment outcomes?
3. Are differences in research design (comparison groups, randomization, and statistical methodology) associated with differences in treatment outcomes?
4. Are differences in outcome measures (self-report measures versus objective data, types of outcome assessed, and follow-up time) associated with differences in treatment outcomes?

CHAPTER III: METHODS

Procedure

Based on the descriptions provided by Grant and Booth (2009), a systematic search and critical review was the most appropriate type of review to address the proposed research questions. The systematic search and critical review approach is appropriate for addressing broad questions, such as what variables might account for differences between study findings. The approach calls for a systematic search of the literature, which allows the researcher to gather, synthesize, and analyze research findings (Grant & Booth, 2009).

Search. A systematic review of the literature was conducted to identify studies to be included in the critical review. The primary search was conducted electronically. The search terms “Multidimensional Treatment Foster Care,” “MTFC,” “Treatment Foster Care Oregon,” “TFCO,” “Treatment Foster Care,” and “TFC” were entered into the following databases: Academic Search Premiere, PsychArticles, Psychology and Behavioral Sciences Collection, PsycINFO, Medline, and Master File Premiere.

Initial search procedures yielded over 14,000 articles. An abbreviated review of the search results indicated a substantial amount of irrelevant results. In order to reduce the number of irrelevant articles identified abbreviations were removed from the search (e.g., “MTFC”, “TFCO”, “TFC”), the search was limited to journal articles and dissertations, and only articles from 1985 or later were included. The year 1985 was chosen due to the first identified MTFC study being published in 1990, therefore 1985 allowed for a five-year buffer. The search end date was December 31, 2018 in order to be consistent with the calendar year and to account for the

potential of articles being added to the online databases after their publication date. Using these limiters, the search resulted in 8,975 articles. Articles were displayed 50 to a page and sorted by relevance. In order to streamline the search process it was determined that if no articles were retained after five consecutive pages (i.e., 250 articles), the search would be terminated. The abstracts of 500 articles were reviewed prior to the discontinue criteria being met. See Figure 1 for a visual depiction of the electronic database search.

The abstracts of the retrieved studies were reviewed for inclusion and each was documented in an Excel file. Documentation included the study author, year of publication, article title, date of retrieval, where the study was retrieved from (e.g., database search, website search, review article, etc.), inclusion criteria, and the result of the review (e.g., included, excluded after abstract review, excluded after full review, reason for exclusion). Articles were included if they were written in English, utilized a study design involving treatment outcomes associated with MTFC and juvenile offending, and included a population of juvenile offenders or adolescents with behavioral difficulties.

For the abstract review, the default response for unclear information was inclusion. For example, if it was unclear as to whether or not the population in the study was juvenile offenders, this criterion was considered to be met for the purposes of the abstract review. Inclusion was chosen as the default response in order to ensure relevant articles were not excluded prematurely. If an article was excluded for multiple reasons, the primary reason was documented as the reason for exclusion. For example, if the article was not a direct evaluation of MTFC and also did not include an adolescent population, the documented reason for exclusion was “non-MTFC”.

Of the 500 abstracts reviewed in the database search, 55 articles were retained for full review. The remaining 445 articles were excluded due to the following reasons: 232 were not

about MTFC, 35 examined pre-school MTFC, four examined the KEEP program, 43 were reviews, eight were replies or editorials, two were book reviews, 85 included MTFC but looked at an outcome outside the scope of the current project (e.g., pregnancy rates, depression symptoms, psychotic symptoms, school attendance, homework completion, substance use, partner substance use, etc.), 34 were duplicates of studies already searched, one was a correction sentence, and one was not written in English.

After the database search was completed, the MTFC website was examined and the abstract of each article listed on the website was reviewed. A total of 65 abstracts were reviewed and three articles were retained. The remaining articles were excluded due to the following reasons: eight were not MTFC interventions, four examined pre-school MTFC, one examined the KEEP program, 12 were reviews that included MTFC, 35 were duplicates of studies already searched, and two were not located.

Next, each article that was documented as a potential review was perused to search for any missed articles. A total of 55 review articles were examined. From these reviews, 300 potentially relevant citations were identified. After reviewing the references of these articles, no new studies were retained. The articles were excluded due to the following reasons: 43 were not MTFC studies, two were MTFC studies but examined other outcomes, two were review studies, six were books or book chapters, and 247 were duplicates of studies already searched.

The “file drawer” problem is the assumption that published studies only represent a sample of all studies conducted with those unpublished likely to include null results (Cumming, 2012; Rosenthal, 1995). In order to address this issue and identify any potential unpublished studies, an attempt was made to contact the authors of studies retained during the literature search. Emails were obtained for 15 authors and they were contacted. Four authors responded

and 10 studies were received. Two of the studies were research briefs describing larger program implementations that included the same data as the published studies already identified. The remaining eight articles were excluded due to being duplicates of studies already included.

The 58 articles retained after the abstract review were read in their entirety. After full review, 46 articles were excluded and 12 articles were retained. Please see Appendix A for a list of studies excluded after full review and the reason for exclusion. Please see Figure 2 for a flow chart of the literature search. Additionally, the bibliographies of the retained articles were reviewed to ensure no studies were missed. No new articles were identified during this process.

Coding. The coding protocol was developed in consideration of the PICOS guidelines (Shamseer et al., 2015), the Cochrane Collaboration Risk of Bias Tool (Higgins, Altman, & Sterne, 2011), and the variables relevant to answering the research questions. The coding document is available in Appendix B. Each retained article was assigned a study number and coded in an Excel document based on the coding protocol.

Data Analyses. A large number of variables were extracted during the coding process. Each data set was considered one point of data. In order to simplify the data and facilitate data compilation, an overall research design quality summary score was calculated. Each research design variable was dummy coded (0 = No, 1 = Yes) so that a summary score could be created. The summary score was calculated by adding the scores for each of the following variables: whether the study included (1) a control group, (2) random assignment, (3) blinding, (4) participant blinding, (5) personnel blinding, (6) outcome assessment blinding, (7) intention to treat, (8) attrition reported, (9) treatment length reported, and (10) completion rate reported. In addition, variables that had missing data for more than half of the studies were excluded from analyses and the previous literature was used as a guide to determine which variables needed to

be retained. The following variables were retained for final analyses: studies using the data set, country where data were collected, gender of participants, ethnicity of participants, average age of participants, age range of participants, number of participants, treatment abbreviation, if the study was conducted by or supervised by the treatment creators, expected length of treatment in days, type of comparison group, description of comparison group, type of placement, specific interventions used, type of outcome measure, specific measure used, statistical analyses used, length of follow-up time, level of significance, effect size used, effect size value, and overall research design quality score. When possible, variables were dummy coded (i.e., data collected in the United States; 0 = No, 1 = Yes) or made categorical (i.e., effect size = None, Small, Medium, or Large) in order to aid interpretation. Gender of participants (percent male), ethnicity of participants (percent White), average age of participants, length of follow-up time, value of effect size, and overall research design quality score were maintained as continuous variables.

Due to the large variability between studies and the use of multiple measures within the same study, categorical effect size (i.e., no effect, small effect, medium effect, large effect) was chosen as the primary outcome measure. For articles that did not report effect sizes, the effect sizes were calculated when possible based on the data provided. Effect sizes were calculated for at least one variable from eight of the nine data sets. To accomplish this multiple resources were used (“Cramer’s V,” n.d.; “Effect Size Calculator for T-Test,” n.d.; Lee, 2016; Sullivan & Feinn, 2012; Uanhoro, 2017; Watson, 2018; Zaiontz, 2014). Due to the small number of data sets and the large variability between studies, quantitative analyses would have yielded low statistical power and were deemed inappropriate. The primary analysis was a summary of qualitative data and consisted of a critical examination of the study variables as this was determined to be a more meaningful method of data interpretation. Consistent with guidelines for reporting the results of

review studies, results are presented in text and in tables as appropriate (MacLure et al., 2016; Shamseer et al., 2015).

CHAPTER IV: RESULTS

Twelve studies were obtained that represented nine data sets. The analysis was qualitative and the results are summarized in Tables 1 – 6. The studies were published between 1990 and 2016. A summary of each retained study is provided below.

Summary of Retained Studies. Data set one was a study conducted by Chamberlain and Reid (1991). This study consisted of eight male and twelve female adolescent participants referred by Oregon State Hospital who had various diagnoses. Regarding the control group, seven participants were placed in community settings (i.e., residential center, juvenile corrections training school, group home, secure residential treatment center), and three remained in the state hospital. Treatments used in the control group were individual therapy, group therapy, and milieu therapy. Outcome measures included: Child Global Assessment Scale (CGAS; Shaffer et al., 1983), Parent Daily Report Checklist (PDR; Chamberlain & Reid, 1987), Behavior Symptom Inventory (BSI; Derogatis & Spencer, 1982), Adolescent Problem Inventory (API; Gaffney & McFall, 1981), Taxonomy of Problematic Social Situations (TPOS; Dodge, McClaskey, & Feldman, 1985), and institutionalization rates. The CGAS was included only in the baseline assessment. The PDR, BSI, API, and TPOS were used at baseline and three months and seven months post-baseline. Institutionalization rates were obtained for twelve months before study referral, for the time between referral to initial treatment placement, and for 365 days following treatment placement. For the PDR, the experimental group demonstrated significantly more improvement at three month follow-up than the control group. At seven months, the control group also demonstrated improvement and there was no significant difference between the two

groups. No significant differences were found among the other measures and no effect sizes could be calculated.

The second data set was represented in a study by Biehal, Ellison, and Sinclair (2011). Participants were 48 serious or persistent adolescent offenders. The sample was primarily male but also included females. The comparison group included custody or the Intensive Supervision and Surveillance Programme (ISSP). Outcome measures used were reconviction, use of custody, number of offenses, nature of offenses, living situation, and participation in education, training, employment, and peer relationships. Data were collected one year after treatment began for all measures and one year after treatment ended for only record data on reoffending. The results of the first follow-up indicated greater improvement in the treatment group on the following measures: percent reconvicted, mean number of days to first offense, total number of offenses, mean number of offenses, mean number of offenses per day at liberty, mean offense gravity score, entry into custody, and mean days in custody. Effect size was only calculable for percent reconvicted and yielded a medium effect size. At the second follow-up there were no significant differences between the groups.

The third data set included two studies: Chamberlain and Reid (1998) and Eddy and colleagues (2004). The data set consisted of 79 male adolescents with histories of serious and chronic delinquency. The comparison group consisted of community-based group care and involved various interventions (i.e., positive peer culture, social interventions, cognitive therapy, eclectic therapy, behavior management, reality therapy, individual therapy, and group therapy). Outcome measures included: criminal referral data (i.e., number of days in lock up, number of criminal referrals) and self-report data from the Elliot Behavior Checklist (EBC; Elliot et al., 1983). Records data were collected for the year prior to baseline and twelve months and twenty-

four months following the end of the program while self-report data was collected every six months through twenty-four months post-baseline. The results from the twenty-four month follow-up are presented by Eddy and colleagues (2004) and include only record data. At twelve months post-baseline the treatment group demonstrated significantly more improvement on all outcome measures reported: number of days in locked settings, Elliot Behavior Checklist: General Delinquency Scale, Elliot Behavior Checklist: Index Offenses, and Elliot Behavior Checklist: Felony Assaults. Effect size was calculable for the number of days in locked settings and resulted in a medium effect size. With regard to twenty-four month follow-up, the treatment group again showed greater improvements on all measures reported: number of criminal referrals, criminal referrals for at least one violent offense, criminal referrals for violent offenses, and self-reported violence. Effect size was calculable for number of criminal referrals (small effect size) and criminal referrals for at least one violent offense (small effect size).

The fourth data set was represented in studies conducted by Chamberlain, Leve, and DeGarmo (2007) and Leve, Chamberlain, and Reid (2005). Participants were 81 adolescent females who had at least one criminal referral within the prior twelve months. The comparison group consisted of community-based group care and included behavioral, eclectic, and family style therapeutic approaches. Outcome measures consisted of days in locked settings, criminal referrals, Child Behavior Checklist (CBCL; Achenbach, 1991), and Elliott Self-Report of Delinquency Scale (ESDS; Elliot et al., 1985). Record data was collected for twelve months before treatment entry, twelve months after treatment entry, and twenty-four months after treatment entry. Self-report and other-report data were collected at baseline and at twelve months and twenty-four months post-baseline. The latter follow-up results (twenty-four months post-baseline) were presented by Chamberlain and colleagues (2007). Chamberlain and colleagues

(2007) also presented additional information from the twelve month follow-up that was not initially included in Leve and colleagues (2005). At twelve month follow-up there was a significant difference between the groups, with the treatment group having more positive outcomes on the following measures: days in locked settings as calculated by ANCOVA test (small effect size), days in locked settings as calculated by t-test (medium effect size), criminal referrals as calculated by t-test (small effect size), author's calculation of delinquency growth construct (small effect size), and CBCL: Delinquency Subscale (medium effect size). There were no significant differences between the groups on criminal referrals as calculated by ANCOVA or on the ES: General Delinquency Scale as calculated by ANCOVA or t-test. At twenty-four month follow-up, there were significant differences between the groups with the treatment group having more positive outcomes on days in locked settings (large effect size) and the authors' calculation of delinquency growth construct (medium effect size). There were no significant differences between the groups with regard to criminal referrals or the ES: General Delinquency Scale.

Data set five was a study conducted by Chamberlain (1990). Participants were twenty male and twelve female adolescents residing in a juvenile correctional facility. The comparison group consisted of the following placements: group home, secure residential facility, intensive parole supervision, and specialized foster care in another community. Outcome data consisted of reincarceration rates and was collected at twelve months and twenty-four months post-treatment (507 and 872 days post-baseline, respectively). The reported results were limited. At follow-up one, the percent reincarcerated was significantly less for the treatment group than the comparison group (medium effect size). At follow-up two, the percent incarcerated at least once was significantly less for the treatment group (medium effect size). There were no differences

between groups regarding percent incarcerated or number of days spent incarcerated at the second follow-up.

Data set six was represented by two studies: Bergström and Højman (2016) and Hansson and Olsson (2012). Participants were 46 male ($n = 28$) and female ($n = 18$) adolescents with a diagnosis of Conduct Disorder. The comparison group consisted of group care, living with parents, foster family care, and living in an apartment. Interventions used in the comparison group were home-based interventions, family therapy, mentorship, and drug testing. Outcome data were collected at baseline, and at twelve months, twenty-four months, and thirty-six months post-baseline. The thirty-six month data was reported by Bergström and Højman (2016). Relevant outcome measures for the first two follow-up periods included the Achenbach system (ASEBA; Achenbach & Rescorla, 2001) which consists of the Child Behavior Checklist (CBCL) and the Youth Self Report (YSR). The third follow-up period utilized record data and included number of days in locked settings, criminality, and engagement in violent crime.

The results at twelve-month follow-up suggested a significant group difference with the treatment group showing more positive outcomes for percent engaged in violent crime (medium effect size). No group differences were found on the YSR: Problem Scale, CBCL: Problem Scale, or percent engaged in criminal activity. For the twenty-four month follow-up, no significant differences were found among the outcome measures (i.e., YSR: Problem Scale, CBCL: Problem Scale, percent engaged in violent crime, or percent engaged in criminal activity). At thirty-six month follow-up, significant differences were seen with the treatment group showing greater improvement on the following measures: number of days in locked settings, percent engaged in violent crime for all three years (medium effect size), percent locked-up for three months or more (medium effect size), percent locked up for six months or

more (small effect size), and percent engaged in criminal activity (medium effect size). No significant differences were found for percent engaged in violent crime, percent locked up at any point, or percent engaged in criminal activity for all three years.

The seventh data set was represented by Westermark, Hansson, and Olsson (2011). Participants were thirty-five male ($n = 18$) and female ($n = 17$) adolescents with a diagnosis of Conduct Disorder. The comparison group was comprised of residential care, foster care, and home-based interventions. Family therapy, mentorship, drug testing, and individual therapy were listed as interventions for the comparison group. Follow-up data were collected at six months, twelve months, and twenty-four months post-baseline but only the twenty-four month follow-up data were reported. The Achenbach system (ASEBA; Achenbach & Rescorla, 2001) consisting of the Child Behavior Checklist (CBCL) and the Youth Self Report (YSR), was used as the primary outcome measure. The only statistically significant difference found was for the YSR: Externalizing Problems Scale (small effect size), with results favoring the treatment group. While none of the other measures illustrated a statistically significant difference, the overall conclusion was that the treatment group generally showed greater improvement than the comparison group. The treatment group demonstrated improvements on all measures and the comparison group only demonstrated improvement on some measures. Effect sizes were reported though no statistically significant differences were observed on the CBCL: Caregiver Total Problem Score (medium effect size), CBCL: Caregiver Internalizing Problems (medium effect size), CBCL: Caregiver Externalizing Problems (no effect), YSR: Total Problem Score (small effect size), or YSR: Internalizing Problems Scale (small effect size).

Data set eight was a study conducted by Smith, Chamberlain, and Deblinger (2012). Participants were 30 female adolescents who had at least one arrest in the year prior, were court

mandated for out of home care, had at least one traumatic experience, and were not currently pregnant. The comparison group utilized group care and reported interventions included: group therapy, individual therapy, recreational activities, milieu therapy, family therapy, and positive peer culture. To assess change, the authors created a composite mental health score based on the following measures: anxiety and depression scales of the Brief Symptom Inventory (BSI; Derogatis & Spencer, 1982), Child Behavior Checklist (CBCL; Achenbach, 1991), Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime (K-SADS-PL; Kaufman et al., 1997), and the Trauma Symptom Checklist for Children (TSCC; Briere, 1996). A composite delinquency score was created based on official arrests, self-reported delinquency, caregiver-reported delinquency, and number of days spent in detention. Outcome data were collected at baseline and at twelve months post-baseline. Results were significant and favored the treatment condition for both the Composite Mental Health Score and the Composite Delinquency Score. Effect sizes were not reported and were not calculable based on the data provided.

Data set nine was represented by Green and colleagues (2014). Participants were 219 male and female adolescents who were currently in an unstable placement or at risk of custody/secure care and demonstrated complex or severe emotional or behavioral difficulties. The study consisted of two components, a randomized control trial and an observational quasi-experimental case control study. The comparison group consisted of foster care and residential care. Interventions listed for the comparison group included behavior management, social skills, problem-solving skills, and peer relationships. The primary outcomes were the Health of the Nation Outcome Scales for Children and Adolescents (HoNOSCA; Gowers et al., 1999) and the Children's Global Assessment Scale (CGAS; Shaffer et al., 1983). Ratings for the HoNOSCA

were completed by a researcher using multiple sources of data (i.e., structured interview with the adolescent, structured interview with the adolescent's caregivers, CBCL, YSR, collateral reports, and education, health, and social service records). Baseline data were collected six months prior to the beginning of treatment and follow-up data were collected twelve months post-baseline. Data on offending were collected from caregivers and social workers for the six month period prior to treatment and for the three month period prior to the end of treatment. Results showed both the treatment and comparison groups improved with no significant differences found in either component of the study. Subgroup analysis showed positive treatment effects for individuals who had higher initial levels of antisocial behavior.

Results by Hypothesis. Regarding hypothesis one (participant variables), the number of participants in each study ranged from 20 to 219 (please see Table 2). The majority of the data sets ($n = 6$) involved less than 50 participants. One data set appeared to be an outlier and consisted of 219 participants. The mean age of study participants ranged from 13.1 years to 15.4 years while the age of participants ranged from 9 years to 18 years. With regard to gender, one data set included only male participants, two data sets included only female participants, three data sets consisted of mostly males, one data set consisted of mostly females, and two data sets were relatively equally balanced with male and female participants. Hypothesis two related to differences among intervention variables (please see Table 3). With regard to intervention variables, five of the interventions were conducted by the treatment creators and the other four indicated the treatment creators served as consultants in some form. The expected length of treatment ranged from 180 days to 365 days and was reported for six of the studies.

Hypothesis three included research design (please see Table 6) and comparator variables (please see Table 4). Comparison groups varied greatly in type with six of the data sets using

more than one form of care in the comparison group. Five of the comparison groups included some form of residential or custodial care while two used only community-based group care and one included only group care. With regard to specific interventions in the comparison groups, four studies reported using individual therapy, three reported using group therapy, and three cited behavioral approaches. Every study that reported specific interventions or theoretical orientations ($n = 7$) reported more than one specific intervention or orientation. Study methodology summary scores ranged from two to six with the majority of the data sets earning a score of four or higher ($n = 7$). Four data sets used an RCT design, four used a quasi-experimental design, and one used a mixed methods design consisting of an RCT arm and an observational arm. Seven of the data sets used random assignment and five of the data sets used some form of blinding.

Regarding hypothesis four (outcome measures), there was large variability among the outcome variables (please see Table 5). Three studies included three types of outcome data (i.e., self-report, other report, and records). Two studies included at least two different types of data, two used just record data, one used only other-report data, and one used only a composite score created by the authors. Follow-up time was calculated in days post-baseline and ranged from 90 days to 1,095 days. Seventy-five outcome data points were obtained from the studies with the following results: seven small effect sizes, eleven medium effect sizes, and one large effect size. Forty outcomes yielded non-significant results. Sixteen outcomes yielded significant results but effect sizes were not calculable based on the data available in the publications. Outcome data for self-report measures were as follows: two small effect sizes, one medium effect size, one large effect size, nine non-significant effect sizes, and four effect sizes that were not calculable. Outcome data for other-report measures were as follows: one medium effect size, twelve non-significant effect sizes, and one effect size that was not calculable. Outcome data for records

were as follows: four small effect sizes, eight medium effect sizes, nineteen non-significant effect sizes, and nine effect sizes that were not calculable. For the composite outcome measures, one small effect size was obtained, one medium effect size was obtained, and two effect sizes were not calculable. The most frequently used outcome was record data ($n = 40$), followed by self-report data ($n = 17$), other-report data ($n = 14$), and composite scores ($n = 4$). Of the effect sizes that were calculable, record data was the most likely to result in positive effects.

CHAPTER V: DISCUSSION

Hypotheses. The purpose of the current study was to systematically and critically review the literature on MTFC in order to determine if study variables related to participants, intervention, research design, or outcome measures might explain the disparate findings in the MTFC literature. As discussed in the literature, a unique aspect of MTFC is that it has been used and studied with an all-female juvenile offender population. After examining participant variables, the current data does not indicate that MTFC works any differently with male juvenile offenders than with female juvenile offenders. This could support the claim that MTFC is equally effective for males and females. No clear conclusions can be drawn about participant variables related to age or ethnicity when using the current data.

With regard to intervention variables, each study was either conducted by the treatment creators or involved consultation with the treatment creators. This indicates treatment fidelity was high across studies, however it could also result in potential bias for those studies that did not include blinding (i.e., Biehal, et al., 2011; Chamberlain, 1990; Hansson & Olsson, 2012; Westermarck, Hansson, & Olsson, 2011). With regard to study methodology, the majority of the studies appeared to have used sound methodology. No clear conclusions were apparent related to treatment or study methodology variables, including: expected length of treatment or type of comparison group.

With regard to outcome measures, a closer look at the outcome measures in relation to the effect sizes indicates the self-report and other-report measures were less likely than records to achieve a substantial effect. This could represent an inherent problem with self-report or other-

report measures, or it could indicate MTFC is less effective in changing the adolescents and caregivers perceptions of behavior and more effective in influencing actual arrest data. It could also indicate the overall severity of behavior is being reduced by the treatment such that problematic behaviors may still be occurring but are not present at a level that would result in contact with the justice system or require intervention by the justice system.

Overall, results suggest a pattern in which MTFC is initially more effective than the comparison treatment with effects diminishing over time (e.g., both groups improving about the same when longer follow-up periods are examined) (Biehal et al., 2011; Chamberlain & Reid, 1991; Hansson & Olsson, 2012). It could be that MTFC reduces delinquent behavior more quickly or at a greater rate initially than alternative treatments, resulting in greater economic benefit and quality of life benefits for those receiving the treatment. It could also be that the initial improvements are not maintained once treatment is discontinued, indicating comparison treatments ultimately work just as well in the long-term. Lastly, it may be the case that certain outcomes are more strongly impacted by MTFC as compared to alternative treatments; therefore gains in only specific areas are maintained. Overall, with regard to the proposed research questions, no clear conclusions can be drawn based on the current data due to the large variability among studies and the limited number of data sets. However, the data do provide additional information about MTFC, have implications for the larger field of effectiveness research, and provide a clear direction for future research.

Addressing Study Variability. Though MTFC has been identified as an effective treatment for delinquent behavior, the current research base indicates it may not be consistently more effective than treatment as usual. Several researchers have provided hypotheses as to why the discrepancies in the literature exist. Green and colleagues (2014) and Sinclair and colleagues

(2016) provide evidence that MTFC may be more beneficial for individuals showing higher levels of antisocial behavior and less beneficial for those showing lower levels of antisocial behavior. Smith (2004) examined a subset of data from two studies and found treatment length (i.e., remaining in MTFC treatment for at least six months) was the most significant predictor of re-offending behavior. Hansson and Olsson (2012) suggested a potential reason for the difference is that treatment as usual in Sweden is generally more effective than treatment as usual in the United States. These differences in treatment as usual and implications in research were also examined by L fholm, Br nnstr m, Olsson, and Hansson (2013).

Other researchers have attempted to show the consistency between studies. For example, Rhoades et al. (2013) compared subsets of data from studies conducted in the United States and in England in order to determine if the results (i.e., effect sizes) were similar. Overall, they found the effect sizes for the majority of the outcomes to be comparable; however, the specific outcome measures and multiple aspects of the methodology and participants differed, limiting the ability to make direct comparisons. As the current results indicate, the available research on MTFC does not provide clear conclusions about why these differences exist or whether any of the above hypotheses may contribute to answering this question. Taking together, this suggests problems within the literature itself and potential reasons for this lack of clarity can be attributed to several factors described below.

One difficulty found during the current study was inconsistency related to outcome measures. While the majority of the studies included multimethod assessment, the specific outcome measures chosen were wide-ranging. For example, Chamberlain and Reid (1991) used the Parent Daily Report Checklist (PDR) as a measure of problem behavior while Westermarck and colleagues (2011) used the Child Behavior Checklist (CBCL). At times, the same measure

was used in multiple studies, though the researchers chose to report different scales of the measures which resulted in comparisons of narrow and broad band measures. For example, when using the CBCL, one study reported the Total Problem scale (Hansson & Olsson, 2012) while another study reported the more specific Delinquency subscale (Leve et al., 2005), and yet another reported the broader Internalizing and Externalizing subscales (Westermarck et al., 2011). Though each of these scales are part of the same measure, they represent different constructs and levels of measurement. Similarly, updates to measures resulted in different versions of measures being used. For example, Leve and colleagues (2005) used the original version of the CBCL (CBCL: Achenbach, 1991) whereas Hansson and Olsson (2012) used the more recent version of the CBCL (CBCL: Achenbach & Rescorla, 2001).

A second problem related to measures was unclear reporting of which measure was being used. Both Chamberlain and Reid (1998) and Leve and colleagues (2005) used the Elliot Self-Report of Delinquency scale (ESRD; Elliot et al., 1983; Elliot et al., 1985). However, each study referred to the measure using a different name. Chamberlain and Reid (1998) referred to the measure as the Elliot Behavior Checklist (EBC: Elliot et al., 1983) and Leve and Colleagues referred to the measure as the Elliot Self-Report of Delinquency Scale (ES: Elliot et al., 1985). At first impression, it appeared the studies were utilizing different measures, but after examining the literature it was determined the studies were actually using the same measure under different names.

While multimethod assessment remains an important component of research, the inconsistency in outcome measures across studies made direct comparisons difficult. One way to address this problem, while also being sure to include multimethod assessment, would be to determine the most appropriate and accepted outcome measure for each variable of interest (e.g.,

recidivism, deviant behavior, etc.) and to use these outcome measures in multiple treatment studies so that more direct comparisons can be made. While it may be impossible to always have direct comparisons and complete measure consistency due to measures being updated and translated into other languages, more of an effort could be made to ensure consistency among the constructs being measured and the ways in which they are measured across studies.

In order to address the variability in outcome measures, the strategy used in the current study was to calculate effect sizes for the various outcomes. However, a second problem with the literature was identified as it became clear during the course of the study that there was a lack of consistent statistical reporting among the studies. Effect sizes were often not reported at all and when they were reported the way in which they were reported was often inconsistent. For example, some studies reported effect sizes for only statistically significant analyses whereas others reported effect sizes for analyses regardless of whether the results achieved statistical significance.

When effect sizes were not reported, an attempt was made to calculate the effect size from the available data. This proved to be difficult as many of the studies did not report descriptive data, did not report statistical data clearly, or did not report statistical data for all outcome measures. For example, if an analysis showed a non-significant p value oftentimes the actual value was not reported. Due to this, and in order to maintain consistency within the current study, effect sizes were only included if the analysis achieved statistical significance.

While the statistical reporting in the studies examined may have been consistent with the research standards at the time the papers were published, we have since learned that other statistical information, such as the effect sizes examined here, can help add to the overall interpretation of results. One way to address this is by creating standards for reporting statistical

information. The APA has attempted to do this and recently revised the standards published previously (Appelbaum et al., 2018). However, how widely these standards will be adopted and if they will be adopted by non-APA journals has yet to be fully revealed.

Finally, the available literature reflected a general lack of study replication. As such, another potential solution is to replicate the studies that have already been conducted. While it is useful to explore multiple aspects of a treatment, the first step should be to make direct comparisons across studies. This is particularly true when attempting to determine if a treatment is effective. Once the effectiveness of a treatment on a particular outcome has been adequately established, it is then reasonable to expand the research areas to examine additional aspects of the treatment (e.g., further outcomes, diverse populations, etc.). It seems the MTFC literature began to expand into multiple aspects prior to establishing a sufficient level of effectiveness by appropriately replicating the initial findings of the earlier studies.

Conclusions and Implications. The results of the current study also have implications in the larger context of treatment literature as a whole. The problems identified through the literature search highlight the need for the field of psychology to re-examine how it defines and assesses treatment effectiveness. The use of empirically supported treatments and determining how much evidence is needed for a particular treatment to be deemed effective is a topic that has seen much debate over the years (Castelnuovo, 2010; Elmore, 2016; Tolin, McKay, Forman, Klonsky, & Thombs, 2015). It is time for the discipline as a whole to re-think this, taking into consideration the advancements around outcome assessment and the appropriate use of statistics. In recent years there has been a push to conduct dismantling studies in order to directly establish mechanisms of change and therefore identify which parts of a treatment are most effective and for whom (Nielson et al., 2018). This same discussion should be had with regard to how much of

this information needs to be apparent in order for a treatment to be deemed effective. The results of the current study highlight this need and support Tolin and colleagues (2015) suggestion to alter criteria for effectiveness. MTFC is a prime example of this as it has been deemed an effective treatment even though the literature does not clearly delineate whom the treatment works for, on what outcomes, and under what circumstances. The questions become how much do we need to know about a treatment and which aspects are most important with regard to determining effectiveness?

One way to do this is to re-examine the way we have defined effectiveness in the past and to discuss how it should be defined moving forward. For example, the current standards for a treatment to obtain level 1 support, or the highest level of research support (i.e., “works well; well established treatments”), as defined by the Society of Clinical Child and Adolescent Psychology are as follows: 1) There must be at least two studies (i.e., large-scale randomized controlled trials), demonstrating the treatment is more effective than another treatment or placebo; 2) The treatment has been studied independently in different research settings; and 3) Certain methodological standards related to group design, defining the independent variable, clarification of the study population, using reliable and valid outcome measures, and using statistics appropriately have been met (Society of Clinical Child and Adolescent Psychology, 2017). These standards represent an update to previous standards in that they also include an examination of methodological soundness (Southam-Gerow & Prinstein, 2014). However, these standards lack specificity and transparent guidelines regarding exactly how we determine if these criteria have been sufficiently met.

While the field appears to be moving in the correct direction, it would be useful to look at how these standards could be made more stringent, specific, and clear. An example of this might

be to require that effect sizes be reported, to require the reporting of all statistical analyses conducted regardless of whether the *p* values were deemed significant, and to identify well validated outcome measures to be used for specific constructs. Additionally, once revised guidelines are established, it will be important to revisit the evidence for studies we have deemed effective based on the newly established guidelines.

Study Limitations and Directions for Future Research. The current study has several limitations. Ideally, the data from each study would have been extracted and coded by a second coder in order to establish interrater reliability. This was not the case for the current study as limited study resources resulted in one person being responsible for the data search, data extraction, and coding procedures. In addition, the research literature on MTFC is broader than the scope of the current study. Though this would not assist in clarifying the current research questions, other published studies are available that examine secondary outcomes not related directly to offending that would be useful to consider and would add to the overall knowledge base of MTFC. Finally, while qualitative data is useful, limited conclusions can be drawn from the qualitative data in the current study.

The results of the current study indicate that although MTFC has been deemed effective, further research on MTFC is needed. Later studies should attempt to clarify the research questions proposed here as they are yet to be directly answered by the available data. More research is needed to determine the effectiveness of MTFC and to understand what outcomes it impacts, for whom, and under what conditions.

Future research should include attempts to replicate the information from previous studies more directly. For example, conducting additional research using the measures already administered in previous studies to determine if similar treatment effects are found. Doing this

would create more consistency across studies which would facilitate a more comprehensive quantitative analyses, such as meta-analysis. Considering the lack of information available to address the current hypothesis about why the discrepancies in the MTFC literature exist, targeted research additions or clarifications are called for in future studies. Comparison groups should be more specific. For example, instead of comparing MTFC to a multitude of community-based care options, comparison groups should include more specific treatments. Comparisons could be made to outpatient Cognitive-Behavioral Therapy or to the other two community-based treatments identified as being effective for addressing delinquent Behavior (i.e., Functional Family Therapy and Multisystemic Therapy).

In order to determine if MTFC is more effective for higher levels of antisocial behavior as compared to lower levels of antisocial behavior, future studies should aim to categorize participants into groups that consist of various levels of severity of antisocial behavior. It will also be important for studies to include relevant diagnostic considerations, such as whether participants meet the criteria for Conduct Disorder. The standardized treatment approach of MTFC limits the amount of treatment specific variables that may be altered, however future studies should examine the impact of length of treatment on outcomes in order to examine dosage response. Such research would help to determine what length of treatment results in the most benefit and when this benefit begins to level off in order to avoid excessive treatment time and unneeded treatment cost. Finally, further research is needed to understand the overall pattern that was found regarding MTFC appearing to be more effective than comparisons treatments initially, with treatment effects often fading or becoming equal over time between groups. Future studies should examine the overall benefits of this pattern, including potential financial benefits

and improvements to overall quality of life of participants, to help establish whether this overall pattern results in added gains above and beyond the initial treatment impacts.

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APPENDIX

APPENDIX A: ARTICLES RETAINED AFTER ABSTRACT REVIEW AND EXCLUDED
AFTER FULL REVIEW

Articles Retained After Abstract Review and Excluded After Full Review

Reference	Reason For Exclusion
Kerr et al., 2014	Other outcome: depressive symptoms & suicidal ideation
Van Ryzin & Leve, 2012	Other outcome: affiliation with delinquent peers
Kerr, Leve, & Chamberlain, 2009	Other outcome: pregnancy rates
Eddy & Chamberlain, 2000	Other outcome: family management skills & deviant peer association
Smith, 2004	Duplicate: subsample of data from included data sets
Rhoades et al., 2013	Duplicate: subsample of data from included data sets
Sinclair et.al, 2016	Other outcome: antisocial behavior as a mediator
Gustle et al., 2007	Other outcome: symptom load
Leve, Fisher, & Chamberlain, 2009	Review of 4 RCTs
Hine & Moore, 2015	Non-MTFC
Leve, Chamberlain, & Kim, 2015	Review of articles
Rhoades et al., 2016	Other outcome: risk factors for adult offending
Leve, Kerr, & Harold, 2013	Other outcome: if pregnancy resulted in poorer outcomes
Smith, Chamberlain, & Eddy, 2010	Other outcome: substance use
Rhoades et al., 2014	Other outcome: drug use and partner drug use
Farmer et al., 2010	Non-MTFC
Moore & Chamberlain, 1994	Other outcome: case study in educational setting
Bertram, Narendorf, & McMillen, 2013	Non-MTFC
Poulton et al., 2014	Other outcome: psychotic symptoms
Leve & Chamberlain, 2007	Other outcome: school attendance & homework completion
Harold et al., 2013	Other outcome: depressive symptoms
Leve, Khurana, & Reich, 2015	Other Outcome: intergenerational transmission of maltreatment
Dixon et al., 2014	Other outcome: treatment implementation difficulties
Miklowitz, 2014	Editorial: potential mediators
Leve & Chamberlain, 2005	Other outcome: association with delinquent peers
Chamberlain, Ray, & Moore, 1996	Other outcome: staff assumptions
Miklowitz, 2015	Correction sentence
Smith, 2002	Other outcome: gender differences in behavior change
Poulton, Van Ryzin, & Harold, 2014	Duplicate: summary of Poulton et al., 2014
Moore et al., 1994	Non-MTFC
Kim & Leve, 2011	Non-MTFC
Leve, Van Ryzin, & Harold, 2017	Author's Reply
Linscott, 2017	Non-MTFC

Buchanan, 2008	Other outcome: pre-treatment factors/educational outcomes
Harold & DeGarmo, 2014	Author's reply
Laurent et al., 2014	MTFC-P
Robst, Armstrong, & Dollard, 2011	Non-MTFC
Smith et al., 2001	Other outcome: placement disruption
Chamberlain & Reid, 1994	Other outcome: gender differences in risk factors
Chamberlain & Moore, 1998	Duplicate: subset of information from already included data
Hussey & Guo, 2005	Non-MTFC
Farmer et al., 2003	Non-MTFC
Book, Thomas, & Steinke, 2004	Non-MTFC
Lee & Thompson, 2008	Non-MTFC
Jamora et al., 2009	Non-MTFC
Westermarck, Hansson, & Vinnerljung, 2008	Other outcome: placement breakdown

APPENDIX B: CODING PROTOCOL

Coding Protocol

Basic Information	
Study number	Use study number assigned by researcher, unique to each study, used throughout.
Authors	List all Authors (e.g. First Name Last Name; First Name Last Name; etc.)
Source of funding	Record source of funding if identified, if not enter “none”.
Publication date	Year study published
APA in text citation	In text citation following APA style
Full APA citation	Include the full APA bibliography citation
Article title	Include the full article title
Publication status	1-Journal Article 2- Journal Article in Press 3-Book 4-Published Dissertation 5-Unpublished Dissertation
Place of Publication	Include name of journal, book, etc. If unpublished use “n/a”
Follow-up study	1-Yes 2-No
Follow-up studies using this data set	1-Yes 2-No
Number of follow-up studies using this data set	Use number of follow-up studies
Citation for follow-up studies	Use in-text APA citation for each study separated by semi-colons
Country data was collected	1-United States 2-Sweden 3-England
State/Province data was collected	Use State or province, if not available use “n/a”
Year study took place	Insert year or years that study data was collected
Participants	
Total # of participants	Enter total number of participants
# of female participants	Enter total number of female participants, if missing enter n/a
# of male participants	Enter total number of male participants, if missing enter n/a
Ethnicity of participants (select all that apply)	1-Caucasian 2-African-American 3-Other

	4-n/a
Breakdown of Ethnicity of Participants	Provide the number of participants for each ethnic group in percent if provided (e.g., 60% white)
Average age of participants	Enter average age of participants in years, if missing enter n/a
Age range of participants	Enter age range of participants in years, if missing enter n/a
# of participants at follow-up 1	Enter number of participants, or n/a if not applicable
# of participants at follow-up 2	Enter number of participants, or n/a if not applicable
# of participants at follow-up 3	Enter number of participants, or n/a if not applicable
# of participants at follow-up 4	Enter number of participants, or n/a if not applicable
Conduct Disorder Population	1-Yes 2-No
Intervention	
Treatment Name	1-TFC 2-TFCO 3-MTFC 4-SFC 5-IF 6-MTFC+T
Conducted by treatment creators	1-Yes 2-No
Treatment creators served as consult	1-Yes 2-No 3-N/A
Expected length of treatment in days	Enter expected length of intervention in days, if not given enter n/a
Average length of treatment in days	Enter average length of intervention in days, if not given enter n/a
Average length of intervention for control group in days	Enter average length of intervention for control group in days, if not given enter n/a
Average length of intervention for experimental group in days	Enter average length of intervention for experimental group in days, if not given enter n/a
Treatment Modifications	1-Yes 2-No
Experimental group treatment completion rate	Enter completion rate in percentage for experimental group, if not given enter n/a

Control group treatment completion rate	Enter completion rate in percentage for control group, if not given enter n/a
Experimental group number lost to withdrawal/exclusion/follow-up	Enter total number of individuals in the experimental group lost to withdrawal/exclusion/follow-up
Control group number lost to withdrawal/exclusion/follow-up	Enter total number of individuals in the control group lost to withdrawal/exclusion/follow-up
Comparators	
Comparison Group	1-Yes 2-No
Type of Comparison Group	1-Treatment As Usual 2-Matched Cases 3-Other 4-Multiple
Description of Comparison Group	1-Residential Treatment 2- Foster Care 3-Residential School 4-Home-Based Services 5-Intense Parole Supervision 6-Group Care 7-Hospitalization 8-With Parents 9-Community-Based Group Care 10-Supervision 11-Community-Based Program 12-Custody 13-Residential School Care 14-Multiple (specify in next column)
Level of care/types of placements	List the specific types of placements for the comparison group in terms of level of care (e.g., residential treatment, home-based services, custody, group care, etc.) and the number of participants that received each treatment if available.
Specific treatments received by comparison group	List the specific treatments received by the comparison group and the number of participants that received each treatment if available (e.g., group therapy, individual therapy, CBT, etc.)
Outcomes	
Measure 1/Measure 2/Measure 3 (as many as is needed)	List name of measure
Type of measure (M1...)	1-Self-Report 2-Caregiver report 3-Records review

	4-Rating scale 5-Composite/Other
Baseline/Pre-treatment data control group	1-Yes 2-No
Baseline/Pre-treatment data experimental group	1-Yes 2-No
Length of baseline/pre-treatment for control group	Enter length of baseline/pre-treatment data in days
Length of baseline/pre-treatment for experimental	Enter length of baseline/pre-treatment data in days
Number of times outcome data collected	1-1 2-2 3-3 4-4
Outcome follow-up time 1	Enter follow-up time in days or n/a if not provided
Outcome follow-up time 2	Enter follow-up time in days or n/a if not provided
Outcome follow-up time 3	Enter follow-up time in days or n/a if not provided
Outcome follow-up time 4	Enter follow-up time in days or n/a if not provided
Effect size reported	1-Yes 2-No
Type of effect size	1-d 2-PEM 3-PAND 4-IRD 5-NAP 6-PND 7- Other
Effect size	Enter effect size
Overall conclusion	1-Experimental improved more than control 2-Control improved more than experimental 3- No difference between groups
Overall conclusion follow-up 1	1-Experimental improved more than control 2-Control improved more than experimental 3- No difference between groups
Overall conclusion follow-up 2	1-Experimental improved more than control

	2-Control improved more than experimental 3- No difference between groups 4-n/a
Overall conclusion follow-up 3	1-Experimental improved more than control 2-Control improved more than experimental 3- No difference between groups 4-n/a
Overall conclusion follow-up 4	1-Experimental improved more than control 2-Control improved more than experimental 3- No difference between groups 4-n/a
Overall conclusion Measure 1/Measure 2/Measure 3 (as many as is needed)	1-Experimental improved more than control 2-Control improved more than experimental 3- No difference between groups 4-n/a
Subgroup Analysis	1-Yes 2-No
Subgroups Analyzed	List all subgroups analyzed or enter n/a if none
Study Design/Methodology	
Basic Study Design	1-RCT 2-Quasi-experimental 3-Observational study 4-Mixed methods
Random Sequence Generation	1-Yes 2-No 3-Unclear/not reported
Random Assignment	1-Yes 2-No 3-Unclear/not reported
Allocation Concealment	1-Yes 2-No 3-Unclear/not reported
Blinding	1-Single blind 2-Double blind 3-No blinding 4-Not reported
Blinding of Participants	1-Yes 2-No

	3-Unclear/not reported
Blinding of Personnel	1-Yes 2-No 3-Unclear/not reported
Blinding of Outcome Assessment	1-Yes 2-No 3-Unclear/not reported
Intention to treat analysis	1-Yes 2-No 3-Unclear/not reported
Attrition Data Reported	1-Yes 2-No 3-Unclear/not reported
Reasons for Attrition Reported	1-Yes 2-No 3-Unclear/not reported
Exclusion Data Reported	1-Yes 2-No 3-Unclear/not reported
Reasons for Exclusion Reported	1-Yes 2-No 3-Unclear/not reported
Statistical Analyses Used	List analyses used
Power analysis conducted before the study	1-Yes 2-No
Results of power analysis	Report results of power analysis

APPENDIX C: FIGURES AND TABLES

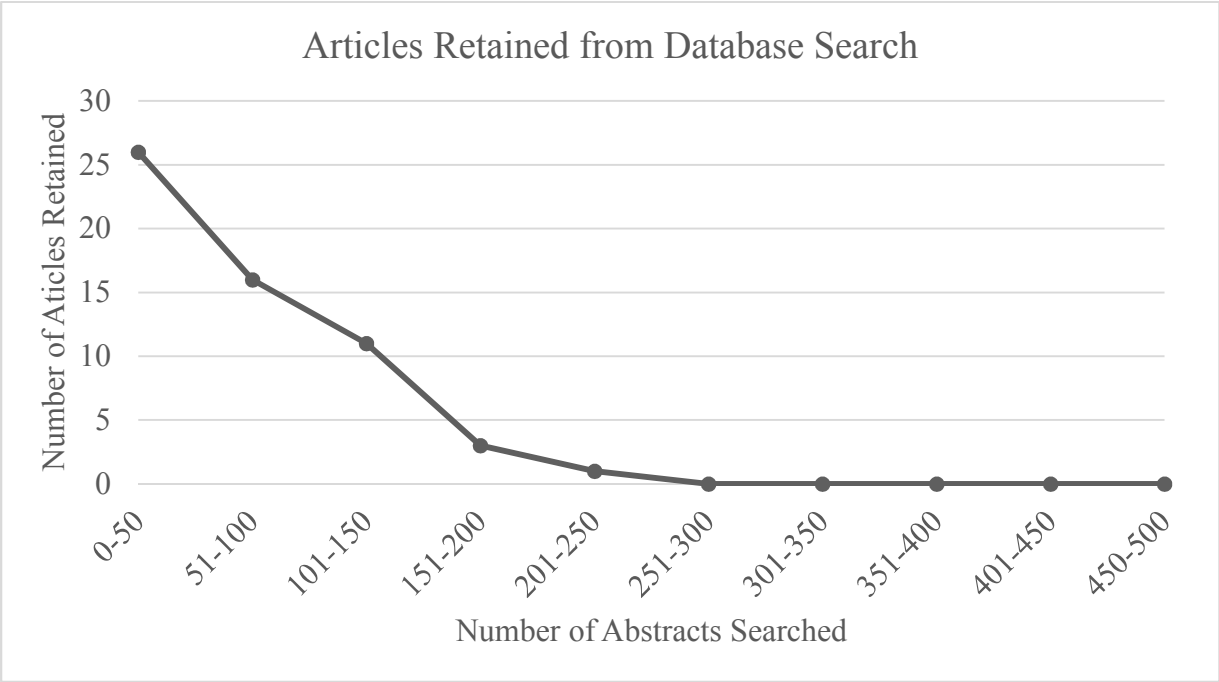


Figure 1. A visual depiction of the electronic database search.

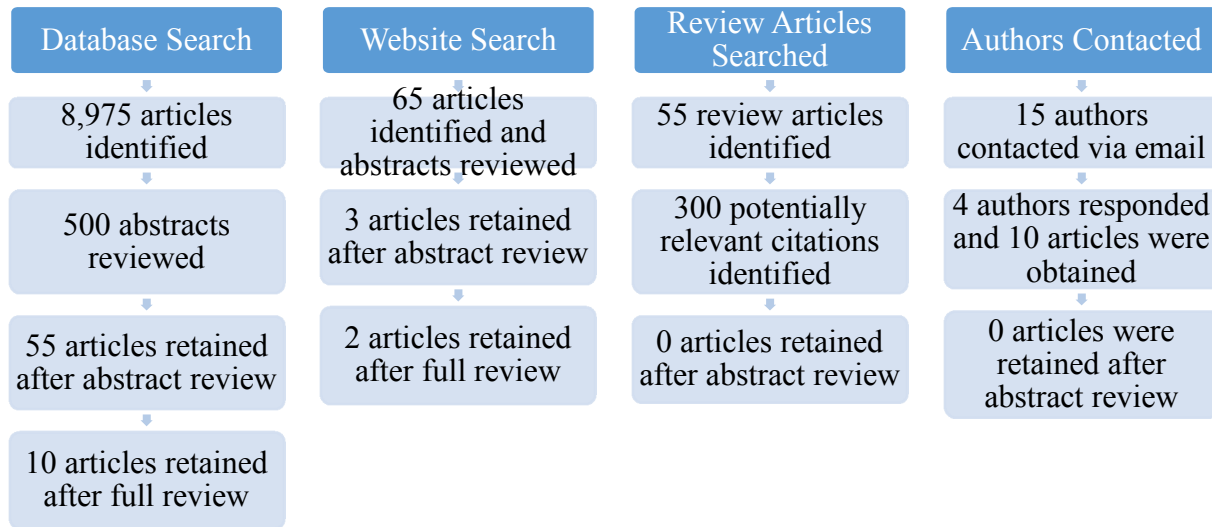


Figure 2. Flow chart of literature search.

Table 1. *Frequencies of Basic Study Variables*

Data Set	Studies Using Data Set	Country Data Collected
1	Chamberlain & Reid, 1991	United States
2	Biehal, Ellison, & Sinclair, 2011	England
3	Chamberlain & Reid, 1998; Eddy et al., 2004	United States
4	Chamberlain, Leve, & DeGarmo, 2007; Leve, Chamberlain, & Reid, 2005	United States
5	Chamberlain, 1990	United States
6	Bergström & Højman, 2016; Hansson & Olsson, 2012	Sweden
7	Westermarck, Hansson, & Olsson, 2011	Sweden
8	Smith, Chamberlain, & Deblinger, 2012	United States
9	Green et al., 2014	England

Table 2.
Frequencies of Participant Variables

Data Set	# of Participants	Mean Age	Age Range	% Male	% White
1	20	14.5	9 - 18	40	n/a
2	47	15.2	n/a	85.1	n/a
3	79	14.9	12 - 17	100	85
4	81	15.3	13 - 17	0	74
5	32	14.6	13 - 18	62.5	n/a
6	46	n/a	12 - 17	60.9	65.2
7	35	15.4	12 - 18	51.4	74.3
8	30	15.3	12 - 17	0	71
9	219	13.1	11 - 16	54.3	86

Table 3.
Frequencies of Intervention Variables

Data Set	Treatment Name	Conducted by Treatment Creators	Treatment Creators Served as Consultants	Expected Length of Treatment in Days
1	SFC	Yes	n/a	n/a
2	IF	No	Yes	279
3	MTFC	Yes	n/a	180
4	MTFC	Yes	n/a	n/a
5	SFC	Yes	n/a	180
6	MTFC	No	Yes	365
7	MTFC	No	Yes	365
8	MTFC+T	Yes	n/a	270
9	MTFC-A	No	Yes	n/a

Note. SFC: Specialized Foster Care; IF: Intensive Fostering; MTFC: Multidimensional Treatment Foster Care; MTFC+T: Multidimensional Treatment Foster Care plus Trauma; MTFC-A: Multidimensional Treatment Foster Care for Adolescence

Table 4.
Frequencies of Comparator Variables

Data Set	Type of Group	Description of Group	Types of Placements	Specific Interventions
1	Other	Multiple	Residential, Juvenile Corrections, Training School, Group Home, Secure Residential, State Hospital, Family Placement	Mileu Therapy, Individual Therapy, Group Therapy
2	Multiple	Multiple	Custody, Intensive Supervision and Surveillance Program (ISSP)	n/a
3	Other	Community - Based Group Care	Community-Based Group Care	Positive Peer Culture, Social, Cognitive, Eclectic, Behavior Management, Reality Therapy, Individual Therapy, Group Therapy
4	Other	Community - Based Group Care	Community-Based Group Care	Behavioral, Eclectic, Family Therapeutic Approach
5	Matched Cases	Multiple	Group Home, Secure Residential Facility, Intensive Parole Supervision, SFC Model in Another Community	n/a
6	TAU	Multiple	Group Care, With Parents, Foster Family Care, Lived in Apartment	Home-Based Interventions, Family Therapy, Mentorship, Drug Testing
7	TAU	Multiple	Residential Care, Foster Care, Home-Based Interventions	Home-Based Interventions, Family Therapy, Mentorship, Drug Testing, Individual Therapy
8	Other	Group Care	Group Care	Group Care, Group Therapy, Individual Therapy, Recreational Activities, Milieu Therapy, Family Therapy Positive Peer Culture
9	TAU	Multiple	Foster Care, Residential Care	Behavior Management, Social Skills, Problem Solving Skills, Peer Relationships

Note. TAU = treatment as usual

Table 5.
Frequencies of Outcome Variables

Measure Type	Data Set	Outcome Measure	Days Post-Base line	Metric	Level of Significance	Effect Size Value	Effect Size
Self-Report	1	BSI: GSI	90	T-Test	Non-Significant	Non-Significant	Non-Significant
Self-Report	1	BSI: GSI	210	T-Test	Non-Significant	Non-Significant	Non-Significant
Self-Report	3	EBC: General Delinquency*	365	n/a	p = 0.01	n/a	n/a
Self-Report	3	EBC: Index Offenses*	365	n/a	p = 0.03	n/a	n/a
Self-Report	3	EBC: Felony Assaults*	365	n/a	p = 0.05	n/a	n/a
Self-Report	4	ES: General Delinquency Scale*	365	ANCOV A, F Part Eta-Squared	Non-Significant	Non-Significant	Non-Significant
Self-Report	4	ES: General Delinquency Scale*	365	T-Test, Cohen's D	Non-Significant	0.16	Non-Significant
Self-Report	4	ES: General Delinquency Scale*	730	T-Test, Cohen's D	Non-Significant	0.056	Non-Significant
Self-Report	3	Self-Reported Violence	730	Regression	p < 0.001	n/a	n/a

Note. CGAS: Child Global Assessment Scale; PDR: Parent Daily Report Checklist; BSI: Behavior Symptom Inventory; GSI: Global Severity Index; EBC: Elliott Behavior Checklist; ES:DS: Elliott Self-Report of Delinquency Scale; CBCL: Child Behavior Checklist; YSR: Youth Self-Report; HoNOSCA: Health of the Nation Outcome Scales for Children and Adolescents
 *The EBC and ES:DS are the same measure. Here they are referred to exactly as they are identified in each study.

Table 5.
Frequencies of Outcome Variables Continued

Measure Type	Data Set	Outcome Measure	Days Post-Base line	Metric	Level of Significance	Effect Size Value	Effect Size
Self-Report	4	Days in Locked Settings	365	ANCOVA, F Part Eta-Squared	$p < 0.05$	0.05	Small
Self-Report	4	Days in Locked Settings	365	T-Test, Cohen's D	$p < 0.05$	0.55	Medium
Self-Report	4	Days in Locked Settings	730	T-Test, Cohen's D	$p < 0.01$	0.81	Large
Self-Report	6	YSR (2001): Problem Scale	365	T Test, Cohen's D	Non-Significant	0.2	Non-Significant
Self-Report	6	YSR (2001): Problem Scale	730	T Test, Cohen's D	Non-Significant	-0.36	Non-Significant
Self-Report	7	YSR: Total Problem Score	730	T Test, Cohen's D	Non-Significant	-0.30	Non-Significant
Self-Report	7	YSR: Internalizing Problems	730	T Test, Cohen's D	Non-Significant	-0.47	Non-Significant
Self-Report	7	YSR: Externalizing Problems	730	T Test, Cohen's D	$p < 0.05$	-0.33	Small

Note. CGAS: Child Global Assessment Scale; PDR: Parent Daily Report Checklist; BSI: Behavior Symptom Inventory; GSI: Global Severity Index; EBC: Elliott Behavior Checklist; ESDS: Elliott Self-Report of Delinquency Scale; CBCL: Child Behavior Checklist; YSR: Youth Self-Report; HoNOSCA: Health of the Nation Outcome Scales for Children and Adolescents
 *The EBC and ESDS are the same measure. Here they are referred to exactly as they are identified in each study.

Table 5.

Frequencies of Outcome Variables Continued

Measure Type	Data Set	Outcome Measure	Days Post-Base line	Metric	Level of Significance	Effect Size Value	Effect Size
Other Report	1	PDR	90	ANOVA	$p < 0.05$	n/a	n/a
Other Report	1	PDR	210	ANOVA	Non-Significant	Non-Significant	Non-Significant
Other Report	4	CBCL (1991): Delinquency Subscale	365	ANCOVA, F Part, Eta-Squared	$p < 0.05$	0.07	Medium
Other Report	6	CBCL (2001): Problem Scale	365	T Test, Cohen's D	Non-Significant	0.25	Non-Significant
Other Report	6	CBCL (2001): Problem Scale	730	T Test, Cohen's D	Non-Significant	0.33	Non-Significant
Other Report	7	CBCL: Caregiver Total Problem Score	730	T Test, Cohen's D	Non-Significant	-0.57	Non-Significant
Other Report	7	CBCL: Caregiver Internalizing Problems	730	T Test, Cohen's D	Non-Significant	-0.51	Non-Significant
Other Report	7	CBCL: Caregiver Externalizing Problems	730	T Test, Cohen's D	Non-Significant	-0.19	Non-Significant

Note. CGAS: Child Global Assessment Scale; PDR: Parent Daily Report Checklist; BSI: Behavior Symptom Inventory; GSI: Global Severity Index; EBC: Elliott Behavior Checklist; ESDS: Elliott Self-Report of Delinquency Scale; CBCL: Child Behavior Checklist; YSR: Youth Self-Report; HoNOSCA: Health of the Nation Outcome Scales for Children and Adolescents
*The EBC and ESDS are the same measure. Here they are referred to exactly as they are identified in each study.

Table 5.
Frequencies of Outcome Variables Continued

Measure Type	Data Set	Outcome Measure	Days Post-Base line	Metric	Level of Significance	Effect Size Value	Effect Size
Other Report	9a	Global Outcomes CGAS	365	Linear Regression	Non-Significant	Non-Significant	Non-Significant
Other Report	9b	Global Outcomes CGAS	365	Linear Regression	Non-Significant	Non-Significant	Non-Significant
Other Report	9a	Global Outcomes HoNOSCA	365	Linear Regression	Non-Significant	Non-Significant	Non-Significant
Other Report	9b	Global Outcomes HoNOSCA	365	Linear Regression	Non-Significant	Non-Significant	Non-Significant
Other Report	9a	Delinquency Social Worker Report	365	Linear Regression	Non-Significant	Non-Significant	Non-Significant
Other Report	9b	Delinquency	365	Linear Regression	Non-Significant	Non-Significant	Non-Significant

Note. CGAS: Child Global Assessment Scale; PDR: Parent Daily Report Checklist; BSI: Behavior Symptom Inventory; GSI: Global Severity Index; EBC: Elliott Behavior Checklist; ESDS: Elliott Self-Report of Delinquency Scale; CBCL: Child Behavior Checklist; YSR: Youth Self-Report; HoNOSCA: Health of the Nation Outcome Scales for Children and Adolescents
 *The EBC and ESDS are the same measure. Here they are referred to exactly as they are identified in each study.

Table 5.
Frequencies of Outcome Variables Continued

Measure Type	Data Set	Outcome Measure	Days Post-Base line	Metric	Level of Significance	Effect Size Value	Effect Size
Record	1	Institutionalization Rates	365	n/a	Non-Significant	Non-Significant	Non-Significant
Record	2	% Reconvicted	365	Chi-Square, Cramer's V	p = 0.019	0.36	Medium
Record	2	% Reconvicted	730	Chi-Square, Cramer's V	Non-Significant	Non-Significant	Non-Significant
Record	2	Mean Days to First Recorded Offense	365	Mann-Whitney U Test	p < 0.001	n/a	n/a
Record	2	Mean Days to First Recorded Offense	730	Mann-Whitney U Test	Non-Significant	Non-Significant	Non-Significant
Record	2	Total # of Offenses	365	Mann-Whitney U Test	p = 0.003	n/a	n/a
Record	2	Total # of Offenses	730	Mann-Whitney U Test	Non-Significant	Non-Significant	Non-Significant
Record	2	Mean # of Offenses	365	Mann-Whitney U Test	p = 0.003	n/a	n/a
Record	2	Mean # of Offenses	730	Mann-Whitney U Test	Non-Significant	Non-Significant	Non-Significant

Note. CGAS: Child Global Assessment Scale; PDR: Parent Daily Report Checklist; BSI: Behavior Symptom Inventory; GSI: Global Severity Index; EBC: Elliott Behavior Checklist; ESDS: Elliott Self-Report of Delinquency Scale; CBCL: Child Behavior Checklist; YSR: Youth Self-Report; HoNOSCA: Health of the Nation Outcome Scales for Children and Adolescents
 *The EBC and ESDS are the same measure. Here they are referred to exactly as they are identified in each study.

Table 5.
Frequencies of Outcome Variables Continued

Measure Type	Data Set	Outcome Measure	Days Post-Base line	Metric	Level of Significance	Effect Size Value	Effect Size
Record	2	Mean # Offenses Per Day At Liberty	365	Mann-Whitney U Test	p = 0.002	n/a	n/a
Record	2	Mean # Offenses Per Day At Liberty	730	Mann-Whitney U Test	Non-Significant	Non-Significant	Non-Significant
Record	2	Mean Gravity Score	365	Mann-Whitney U Test	p = 0.004	n/a	n/a
Record	2	Mean Gravity Score	730	Mann-Whitney U Test	Non-Significant	Non-Significant	Non-Significant
Record	2	Entry to Custody	365	Chi-square	p = 0.044	n/a	n/a
Record	2	Entry to Custody	730	Chi-square	Non-Significant	Non-Significant	Non-Significant
Record	2	Mean Days in Custody	365	Mann-Whitney U Test	p = 0.038	n/a	n/a
Record	2	Mean Days in Custody	730	Mann-Whitney U Test	Non-Significant	Non-Significant	Non-Significant

Note. CGAS: Child Global Assessment Scale; PDR: Parent Daily Report Checklist; BSI: Behavior Symptom Inventory; GSI: Global Severity Index; EBC: Elliott Behavior Checklist; ESDS: Elliott Self-Report of Delinquency Scale; CBCL: Child Behavior Checklist; YSR: Youth Self-Report; HoNOSCA: Health of the Nation Outcome Scales for Children and Adolescents
 *The EBC and ESDS are the same measure. Here they are referred to exactly as they are identified in each study.

Table 5.
Frequencies of Outcome Variables Continued

Measure Type	Data Set	Outcome Measure	Days Post-Base line	Metric	Level of Significance	Effect Size Value	Effect Size
Record	3	Criminal Referrals	730	ANOVA, F Part Eta-Squared	p = 0.003	0.05	Small
Record	3	# of Days in Lock-Up	365	T-Test, Cohen's D	p = 0.01	0.77	Medium
Record	3	Criminal Referrals for at Least One Violent Offense	730	Chi-Square, Cramer's V	p < 0.05	0.18	Small
Record	3	Criminal Referrals for Violent Offenses	730	Regression	p < 0.05	n/a	n/a
Record	4	Criminal Referrals	365	ANCOVA, F Part Eta-Squared	Non-Significant	0.03	Non-Significant
Record	4	Criminal Referrals	365	T-Test, Cohen's D	p < 0.05	0.44	Small
Record	4	Criminal Referrals	730	T-Test, Cohen's D	Non-Significant	0.40	Non-Significant

Note. CGAS: Child Global Assessment Scale; PDR: Parent Daily Report Checklist; BSI: Behavior Symptom Inventory; GSI: Global Severity Index; EBC: Elliott Behavior Checklist; ESDS: Elliott Self-Report of Delinquency Scale; CBCL: Child Behavior Checklist; YSR: Youth Self-Report; HoNOSCA: Health of the Nation Outcome Scales for Children and Adolescents
 *The EBC and ESDS are the same measure. Here they are referred to exactly as they are identified in each study.

Table 5.

Frequencies of Outcome Variables Continued

Measure Type	Data Set	Outcome Measure	Days Post-Base line	Metric	Level of Significance	Effect Size Value	Effect Size
Record	5	% Re-incarcerated	507	Chi-Square, Cramer's V	$p < 0.01$	0.45	Medium
Record	5	% Re-incarcerated at Least Once	872	Chi-Square, Cramer's V	$p = 0.018$	0.42	Medium
Record	5	% Incarcerated	872	Chi-Square, Cramer's V	Non-Significant	Non-Significant	Non-Significant
Record	5	Days in Lock Up	872	T Test, Cohen's D	Non-Significant	0.28	Non-Significant
Record	6	Days in Lock Up	1095	ANOVA	$p = 0.03$	n/a	n/a
Record	6	% Engaged in Violent Crime	365	Chi-Square, Cramer's V	$p < 0.05$	0.35	Medium
Record	6	% Engaged in Violent Crime	730	Chi-Square, Cramer's V	Non-Significant	0.26	Non-Significant
Record	6	% Engaged in Violent Crime	1095	Chi-Square, Cramer's V	Non-Significant	0.26	Non-Significant

Note. CGAS: Child Global Assessment Scale; PDR: Parent Daily Report Checklist; BSI: Behavior Symptom Inventory; GSI: Global Severity Index; EBC: Elliott Behavior Checklist; ESDS: Elliott Self-Report of Delinquency Scale; CBCL: Child Behavior Checklist; YSR: Youth Self-Report; HoNOSCA: Health of the Nation Outcome Scales for Children and Adolescents
*The EBC and ESDS are the same measure. Here they are referred to exactly as they are identified in each study.

Table 5.

Frequencies of Outcome Variables Continued

Measure Type	Data Set	Outcome Measure	Days Post-Base line	Metric	Level of Significance	Effect Size Value	Effect Size
Record	6	% Engaged in Violent Crime For All 3 Years	1095	Chi-Square, Cramer's V	p = 0.001	0.47	Medium
Record	6	% Locked Up at All	1095	Chi-Square, Cramer's V	Non-Significant	0.19	Non-Significant
Record	6	% Locked Up for 3+ Months	1095	Chi-Square, Cramer's V	p = 0.04	0.3	Medium
Record	6	% Locked Up for 6+ Months	1095	Chi-Square, Cramer's V	p = 0.07	0.27	Small
Record	6	% Engaged in Criminal Activity	365	Chi-Square, Cramer's V	Non-Significant	0.23	Non-Significant
Record	6	% Engaged in Criminal Activity	730	Chi-Square, Cramer's V	Non-Significant	0.15	Non-Significant

Note. CGAS: Child Global Assessment Scale; PDR: Parent Daily Report Checklist; BSI: Behavior Symptom Inventory; GSI: Global Severity Index; EBC: Elliott Behavior Checklist; ESDS: Elliott Self-Report of Delinquency Scale; CBCL: Child Behavior Checklist; YSR: Youth Self-Report; HoNOSCA: Health of the Nation Outcome Scales for Children and Adolescents
*The EBC and ESDS are the same measure. Here they are referred to exactly as they are identified in each study.

Table 5.

Frequencies of Outcome Variables Continued

Measure Type	Data Set	Outcome Measure	Days Post-Base line	Metric	Level of Significance	Effect Size Value	Effect Size
Record	6	% Engaged in Criminal Activity	1095	Chi-Square, Cramer's V	$p < 0.05$	0.30	Medium
Record	6	% Engaged in Criminal Activity for All 3 years	1095	Chi-Square, Cramer's V	Non-Significant	0.27	Non-Significant
Composite Score	4	Author's Calculation of Delinquency Growth	365	T-Test, Cohen's D	$P < .05$.43	Small
Composite Score	4	Author's Calculation of Delinquency Growth	730	T-Test, Cohen's D	$p < 0.01$	0.70	Medium
Composite Score	8	Composite Mental Health Symptom Score	365	Linear Regression	$p < 0.05$	n/a	n/a
Composite Score	8	Composite Delinquency Score	365	Linear Regression	$p < 0.05$	n/a	n/a

Note. CGAS: Child Global Assessment Scale; PDR: Parent Daily Report Checklist; BSI: Behavior Symptom Inventory; GSI: Global Severity Index; EBC: Elliott Behavior Checklist; ESDS: Elliott Self-Report of Delinquency Scale; CBCL: Child Behavior Checklist; YSR: Youth Self-Report; HoNOSCA: Health of the Nation Outcome Scales for Children and Adolescents
*The EBC and ESDS are the same measure. Here they are referred to exactly as they are identified in each study.

Table 6.
Frequencies of Study Methodology Variables

Data Set	Study Design	Control Group	Random Assign	Blinding	Participant Blinding	Personnel Blinding	Outcome Assessment Blinding
1	RCT	Yes	Yes	Yes	No	Yes	Yes
2	Quasi-experimental	Yes	No	No	No	No	No
3	Quasi-experimental	Yes	Yes	Yes	No	Yes	Yes
4	RCT	Yes	Yes	Yes	No	Yes	No
5	Quasi-experimental	Yes	No	No	No	No	No
6	RCT	Yes	Yes	No	No	No	No
7	RCT	Yes	Yes	No	No	No	No
8	Quasi-experimental	Yes	Yes	Yes	No	Yes	Yes
9	Mixed Methods	Yes	Yes	Yes	No	Yes	Yes

Table 6.
Frequencies of Study Methodology Variables, continued

Data Set	Intention to Treat Analysis	Attrition Data Reported	Treatment Length Reported	Treatment Completion Rate Reported	Summary Score
1	No	Yes	No	No	5
2	No	Yes	Yes	No	3
3	No	No	No	Yes	5
4	Yes	Yes	Yes	No	6
5	No	No	No	Yes	2
6	Yes	Yes	No	No	4
7	Yes	Yes	No	No	4
8	No	No	No	No	4
9	Yes	Yes	No	No	6

Vita

Jennifer M. Ladner-Graham

EDUCATION

Doctor of Philosophy **2014 - Present**

University of Mississippi, Oxford, MS

Dissertation: “Empirical Support for Multidimensional Treatment Foster Care (MTFC): A Critical Review”.

Advisor/Chair: Stefan E. Schulenberg, Ph.D.

(Dissertation defended April 2019)

Master’s in Arts **2014**

University of Mississippi, Oxford, MS

Thesis: “Work Stress, Meaning, and Values: A Study of Intellectual Disability Support Staff”.

Advisor/Chair: Stefan E. Schulenberg, Ph.D.

Bachelor’s in Science **2008**

University of Southern Mississippi, Hattiesburg, MS

Honors Thesis: “An Implicit Theory Concerning Styles of Dress: Do We Make Inferences About Others Based on Clothing?”

Advisor: Virgil Zeigler-Hill, Ph.D.

Honors: summa cum laude

PROFESSIONAL LICENSURE

Examination for Professional Practice in Psychology (EPPP)

Passed at Ph.D. level **2015**

APA ACCREDITED INTERNSHIP

Predocctoral Intern **2017 - 2018**

Pine Grove Behavioral Health and Addiction Services, Hattiesburg, MS

Supervisors: Christina Williams, Ph.D., Anthony Calbrese, Ph.D., Greg Futral, Ph.D., Lacey Herrington, Ph.D., Leah Claire Bennett, Ph.D., Craig Paterson, Ph.D., Edward Anderson, Ph.D.

Rotation I – Assessment Rotation: Gratitude Program and the Evaluation Center

Administered psychological testing, scored and interpreted results, wrote comprehensive reports and provided feedback to individuals in residential treatment for sexual addiction; presented accurate diagnoses of psychological disorders and made clinically-sound recommendations for treatment; participated in multidisciplinary treatment team staffing to provide the team with evaluation data and interpretations; worked as a collaborator to complete comprehensive psychological evaluations for impaired professionals referred by licensing boards and/or monitoring programs; coordinated with and communicated openly to other team members in order to schedule and administer psychological testing.

Rotation II – Therapy Rotation: Professional Enhancement Program (PEP) and the Employee Assistance Program (EAP)

Co-facilitated/facilitated group therapy sessions utilizing interventions from ACT, CBT, DBT, IPT, MI, and experiential modalities; conducted biopsychosocial, vocational, and personality assessments, provided feedback to patients and wrote assessment reports; had an active role in and participated in multidisciplinary team staffing discussions regarding current treatment data, patient status, treatment recommendations, diagnostic information and return to work recommendations; completed paperwork including group session notes, assessment reports, treatment plans, discharge summaries and other duties in timely manner; provided individual psychotherapy to patients through the EAP utilizing CBT, ACT, IPT and MI modalities

Additional Internship Requirements: intern consultation project, presentations on supervision, assessment case conceptualizations and dissertation, weekly participation in two hour didactic seminars, weekly participation in two hours of individual supervision, 1 hour of group supervision, and 4 hours of staffing across programs

CLINICAL EXPERIENCE

Clinical Therapist

2018 - Present

Forrest General/Pine Grove Professional Enhancement Program, Hattiesburg, MS

Supervisors: Leah Claire Bennett, Ph.D., Sally Moody, LCSW

Facilitated group therapy sessions utilizing interventions from ACT, CBT, DBT, IPT, MI, and experiential modalities, conducted biopsychosocial, vocational, and personality assessments, provided feedback to patients and wrote assessment reports, conducted individual therapy, had an active role in and participated in multidisciplinary team staffing discussions regarding current treatment data, patient status, treatment recommendations, diagnostic information and return to work recommendations, completed paperwork including group session notes,

assessment reports, treatment plans, discharge summaries and other duties in timely manner, complete case management duties.

Behavioral Specialist, Contract Assessor **2015 - 2016**

North Mississippi Regional Center, Oxford, MS

Supervisors: Tom Moore, Ph.D., Q.I.D.P., LPC, NCSP, Jeffrey Scott Bethay, Ph.D., BCBA

Conducted assessments and wrote integrated reports; provided feedback to clients and families including education on diagnoses and explanation of service eligibility.

Psychology Student Intern **2014 - 2015**

Baptist Children's Village, Water Valley, MS

Supervisor: Randy Cotton, Ph.D.

Provided individual therapy services for residents, conducted parent training with house parents, worked with an interdisciplinary team to monitor and address needs of residents.

Contract Assessor **2014 – 2015**

Psychological Assessment Clinic, University of Mississippi

Supervisor: Scott A. Gustafson, Ph.D., ABPP

Conducted psychological evaluations (including cognitive, achievement, attention, and personality testing) and completed integrated reports; provided feedback to clients.

Career Services **2012 – 2013**

University of Mississippi, Oxford, MS

Supervisor: Karen E. Sabol, Ph.D.

Managed the Undergraduate Resource Center and provided career counseling and resources to undergraduate students.

Psychology Student Intern **2010 – 2012**

North Mississippi Regional Center, Oxford, MS

Supervisors: Jeffrey Scott Bethay, Ph.D., BCBA, Kimberly Sallis, Ph.D.

Conducted assessments and wrote integrated reports; provided feedback to clients and families including education on diagnoses and explanation of service eligibility. Collaborated with a multi-disciplinary team to provide comprehensive, integrated services, co-led group therapy, provided individual therapy, conducted functional assessments, and designed/implemented behavior programs.

Graduate Therapist **2010 - 2016**

Psychological Services Center, University of Mississippi, Oxford, MS
Supervisors: Scott A. Gustafson, Ph.D., ABPP, Karen A. Christoff, Ph.D., John Young, Ph.D., Danielle Maack, Ph.D, Stefan E. Schulenberg, Ph.D., Kelly G. Wilson, Ph.D.
Conducted intakes and delivered individual psychotherapy using evidence-based treatment protocols.

RESEARCH EXPERIENCE

Experimental Psychology Research Assistant **2013 – 2014**

University of Mississippi, Oxford, MS

Supervisor: Michael T. Allen, Ph.D.

Assisted with a research study investigating cardiovascular health in females. Recruited participants from the university and a community medical clinic. Collected measures of heart rate variability, including: ekg, blood pressure, and cortisol levels from saliva samples during stressor tasks. Entered and cleaned data.

Developmental Psychology Research Assistant **2012 – 2013**

University of Mississippi, Oxford, MS

Supervisors: Stephanie E. Miller, Ph.D., Carey Bernini Dowling, Ph.D.

Assisted in the development of a new on campus lab, supervised undergraduate students, worked with stimulus presentation software, coordinated lab activities, developed and obtained materials for experiments, recruited study participants, and developed of recruitment materials.

Research Assistant **2009 – 2010**

University of Mississippi, Oxford, MS

Supervisor: Stefan E. Schulenberg, Ph.D.

Supervised undergraduate students, assisted in coordinating lab activities and collecting research data.

TEACHING EXPERIENCE

Graduate Instructor **2015 - 2016**

University of Mississippi, Oxford, MS

Supervisor: Stefan E. Schulenberg, Ph.D.

Taught one Introductory to Psychology course during the Fall and Spring semesters.

TA for Cognitive Psychological Assessment Graduate Course **2013 – 2015**

University of Mississippi, Oxford, MS

Supervisor: Stefan E. Schulenberg, Ph.D.

Provided workshops on psychological assessment, observed psychological assessments and provided feedback on administration and assessment reports, supervised first year graduate students.

TA for Personality Psychological Assessment Graduate Course **2013 – 2015**

University of Mississippi, Oxford, MS

Supervisor: Danielle J. Maack, Ph.D.

Provided feedback on the administration of assessment measures and assessment reports, supervised first year graduate students.

Graduate Instructor **2012 – 2013**

University of Mississippi, Oxford, MS

Supervisor: Karen E. Sabol, Ph.D.

Taught a course entitled Psychology: Introduction to the Major.

PUBLICATIONS

Kurz, A.S., Bethay, J.S., & Ladner-Graham, J.M. (2014). Mediating the Relation between Workplace Stressors and Distress in ID Support Staff: Comparison between the Roles of Psychological Inflexibility and Coping Styles. *Research in Developmental Disabilities, 35*, 2359–2370.

Ladner, J. M., Schulenberg, S. E., Smith, C. V., & Dunaway, M. H. (2011). Assessing AD/HD in college students: Psychometric properties of the Barkley Self-Report form. *Measurement and Evaluation in Counseling and Development, 44*, 215-224.

PRESENTATIONS

Reilly, T.R., Kurz, A.S., Bethay, J.S., Ladner-Graham, J.M., Kellum, K.K., & Wilson, K.G. (2014, April). Contributors to psychological symptoms in staff serving clients with intellectual disabilities: Comparing two coping models. Poster session presented at the Inaugural UM Conference on Psychological Science, Oxford, MS.

Crudup, B. M., Ladner, J. M., & Schulenberg, S. E. (2011, June). Rabbit Hole: A movie workshop identifying logotherapeutic approaches. Workshop presented at the Eighteenth World Congress on Viktor Frankl's Logotherapy, Dallas, TX.

Ladner, J.M., Dunaway, M. H. & Schulenberg, S. E. (2010, August). Assessing Adult ADHD: Psychometric Properties of the Barkley Self-Report Form. Poster session presented at the 118th Annual Meeting of the American Psychological Association, San Diego, CA.

Ladner, J.M. & Zeigler-Hill, V. (2010, September). An Implicit Theory Concerning Styles of Dress: Do We Make Inferences Based On Clothing? Poster session presented at the 61st Annual Meeting of the Mississippi Psychological Association, Biloxi, MS.

OTHER PUBLISHED WORKS

Bibliography Column: The International Forum for Logotherapy. Autumn 2011-Autumn 2012

TRAINING

American Red Cross Psychological First Aid

American Red Cross Foundations of Disaster Mental Health

PROFESSIONAL ACTIVITIES/SERVICE

Ad hoc editor – “*Intellectual & Developmental Disabilities*” book chapter in *Foundations of Behavioral, Social, and Clinical Assessment of Children, Sixth Edition*, by Jerome Sattler.

Ad hoc manuscript reviewer – *Psychological Assessment*

Ad hoc manuscript reviewer - *Social Indicators Research*

Ad hoc manuscript reviewer - *Professional Psychology: Research and Practice*

Ad hoc manuscript reviewer - *Journal of Contemporary Psychotherapy*

Ad hoc manuscript reviewer - *Journal of Clinical Psychology*

Ad hoc manuscript reviewer - *American Journal of Orthopsychiatry*

Ad hoc manuscript reviewer - *Assessment*

Ad hoc manuscript reviewer - *Journal of Personality Assessment*

Ad hoc manuscript reviewer - *Journal of Contemporary Psychotherapy Special Issue on Existential Psychotherapy*

Ad hoc manuscript reviewer - *Journal of Clinical Psychology Special Issue on Positive Psychology and Disaster Mental Health*

Volunteer – *Out of the Darkness Community Walk at the University of Mississippi for the American Foundation for Suicide Prevention*, 2010 and 2014.

MEMBERSHIPS

American Psychological Association 2009-Present

American Psychology and Law Society 2015 - Present