2018

The Relationship Between Executive Functioning and Treatment Outcomes among Juvenile Sex Offenders

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THE RELATIONSHIP BETWEEN EXECUTIVE FUNCTIONING AND TREATMENT OUTCOMES AMONG JUVENILE SEX OFFENDERS

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Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Psychology

October 2018

PHILADELPHIA COLLEGE OF OSTEOPATHIC MEDICINE
DEPARTMENT OF PSYCHOLOGY

Dissertation Approval

This is to certify that the thesis presented to us by Sarah Decker

on the 30th day of July, 2018, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

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Acknowledgements

This dissertation represents the culmination of a voyage that would not have been possible without the support from some very incredible individuals. I would like to express my sincerest gratitude to my dissertation committee for all of their guidance and time throughout this process. Specifically, I appreciate my chair, Dr. David Festinger, for his time, expertise, and continued support in helping to complete this project. I would also like to thank Dr. Robert DiTomasso for his assistance with the statistics, as otherwise I would have been completely lost. Finally, I appreciate Dr. Jonathan Roberds for being willing to participate in my dissertation committee and offering access to the data set; his time and efforts are much appreciated.

I am thankful for all of the members of the PCOM psychology faculty for their help throughout the doctoral program and their support when I faced health challenges. I am forever grateful for all of their kind words and genuine support.

I would also like to thank my classmates, Rachel Allen, Shana Brown-Lieberson, and Melanie Levitt, for providing lots of laughter, good conversation, and a supportive ear to listen. I appreciate our friendship that has continued to strengthen over the past four years. I also want to thank my family, particularly my parents, my sister, and Scott Simpson, for always believing in me and being my biggest fans. It truly takes a village to "raise" a child, and my village continued to support and encourage me when I needed it the most. I am incredibly grateful for all that my family and friends have done, and I know I would not be where I am today if I did not have each one of them by my side.

Abstract

In 2006, youth 17 years of age and younger accounted for almost 20% of arrests for sexual offenses (Becker, 2007). Critical challenges exist to improve treatment for juvenile sex offenders, including identifying additional risk factors and developing treatment that is specifically tailored to the individual. Research has indicated the majority of juvenile sex offenders have difficulties in their executive-functioning abilities (Blanchard, Cantor, Robichaud, & Christensen, 2005). These deficits may contribute to higher risk potential and recidivism among juvenile sex offenders. Whether low levels of executive functioning influence risk of sexual or criminal offending/re-offending is unknown. The present study sought to further explore executive functioning among juvenile sex offenders and examined the relationship between verbal IQ, working memory, processing speed, impulse control among male juvenile sex offenders and the impact it had on treatment completion and recidivism. The study used a non-experimental, archival research design in which logistic regression analyses were conducted to determine if one or more of the independent variables impacted or predicted the two dependent variables. Results indicated no significant association between the independent variables and treatment completion or recidivism. However, results from the correlation analyses showed verbal IQ and impulse control to be positively correlated with treatment completion. Therefore, higher verbal IQ and greater impulse control may be positively associated with successfully completing treatment. While the results overall were insignificant, the present research provides a foundational basis for future research studies on juvenile sex offenders and can further inform residential treatment programs on possible risk factors for re-offending.

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Chapter 1: Statement of the Problem

In 2006, youth 17 years of age and younger accounted for almost 20 percent of arrests for sexual offenses (Becker, 2007). Although juvenile sex offenders are 40% less likely to re-offend following treatment than adult sex offenders, approximately 55% of them are rearrested within one year of release (Becker, 2007). Treatment of juvenile sex offenders differs vastly from that of adult sex offender treatment because of age, level of cognitive development, personality characteristics, and risk factors (Bourke & Donohue, 1996). Critical challenges exist to improve treatment for juvenile sex offenders, including identifying additional risk factors and developing treatment that is specifically tailored to the individual. Research has indicated the majority of juvenile sex offenders have difficulties in their executive-functioning abilities (Blanchard, Cantor, Robichaud, & Christensen, 2005).

Despite the high prevalence of cognitive deficits among this population, virtually no information is known about the relationship between these characteristics of juvenile sex offenders and their risk for sexual offending. Research has demonstrated that regions of the brain responsible for executive functioning are not fully developed until the early to mid-twenties (Dumontheil, 2016; Suleiman, Galvan, Harden, & Dahl, 2016). Executive functioning and processing speed are key factors in decision-making, impulse control, consideration of alternative actions, processing consequences, prioritizing, task initiation, and organization skills. Thus, these deficits may contribute to higher risk potential and recidivism among juvenile sex offenders. Whether low levels of executive functioning influence risk of sexual or criminal offending/re-offending is unknown. This relationship may be critical to understanding juvenile sex offenders' risks and to tailoring treatment to their individual needs. Verifying these risk factors appears to be necessary to individualize treatment and improve outcomes.

Chapter 2: History and Literature Review

Sex Offenders

Statistics on the incidence and prevalence of sexual offenses provide insight into the nature and magnitude of sexual violence. This information can be used to create and implement more effective prevention and intervention strategies. Based on the National Incident-Based Reporting System (NIBRS), in 2013, 69,979 incidents of sexually based offenses occurred, including rape, sodomy, sexual assault with an object, fondling, incest, and statutory rape (cited in U.S. Department of Justice, Federal Bureau of Investigation, 2014). These crimes accounted for approximately 2% of all crimes committed during 2013. This report of sexually based offenses is likely an underestimation, as many sexual offenses are not reported by the victim (U.S. Department of Justice, Federal Bureau of Investigation, 2014). Adult sex offenders are classified into two groups: rapists and child molesters (Becker, 2007). Juvenile sex offenders, between the ages of 12 and 17 years, are classified into three categories: life-course persistent, early-adolescent-onset paraphilic, and adolescent-onset nonparaphilic (Becker, 2007). Offenders who meet the life-course-persistent classification have been found to have greater exposure to male-modeled violent behaviors, are more likely to use substances, and more likely to have viewed pornography before the age of 12 than are same-aged peers who are not classified as life-course persistent (Becker, 2007). Those who meet the early-adolescent-onset paraphilic classification, which includes having one or more paraphilias, have been found to have the highest number of prepubescent male victims. Finally, those who meet the adolescent-onset nonparaphilic classification tend to score low on all criteria except psychosocial deficits and appear to be less psychologically impaired than same aged peers who do not meet the adolescent-onset nonparaphilic classification. However, individuals classified in the adolescent-

onset nonparaphilic classification group experiment more with a delinquent lifestyle, possibly in accordance with negative peers and desire to be autonomous. The differences between adult sex offenders and juvenile sex offenders are important in the development and implementation of treatment. The several common misconceptions about juvenile sex offenders include that juvenile sex offenders become adult sex offenders, juvenile sex offenders are the same as adult sex offenders, juvenile sex offenders require the same long-term treatment as adult sex offenders, and juvenile sex offenders require a secure treatment facility (Becker, 2007). Adult sex offenders are more likely than juvenile sex offenders to be diagnosed with paraphilias, which are mental-health disorders characterized by sexual fantasies, urges, or behaviors involving nonhuman objects, suffering or humiliation, children, and/or other non-consenting persons (American Psychiatric Association, 2013). Juvenile sex offenders are likely to have fewer victims, to be less compulsive, and to show a fluid pattern of arousal when assessed with psychophysiological measures than are adult offenders (Becker, 2007).

Juvenile Sex Offenders

According to the NIBRS, only 2% of crimes committed by men were sexually based crimes, whereas 17% of crimes committed by male juveniles were sexually based crimes and were responsible for more than one third of sexual offenses against children (as cited in U.S. Department of Justice, Federal Bureau of Investigation, 2014). From 2005 to 2006, of adolescents who reported sexual abuse and identified their perpetrator's gender, 15% (i.e., 5% of female victims and 44% of male victims) stated that their perpetrator had been female (ChildLine, 2007). From 2008 to 2009, adolescents who reported sexual abuse and identified their perpetrator's gender increased to 24% (i.e., 8% of female victims and 51% of male victims; ChildLine, 2009). Juvenile sex offenders are less likely to reoffend than are adult sex offenders,

with juvenile sex offenders' reoffense rate ranging from 1.8 to 19% (Becker, 2007). Beginning in the 1980s, male adolescents who committed sexual offenses were considered a special population of concern by the courts (Chamberlain & Reid, 1998). Research suggests that the majority of male adult sex offenders begin having sexually deviant fantasies or engaging in sexually abusive behaviors during their adolescent years (Groth, Longo, & McFadin, 1982; Longo & Groth, 1983). Owing to the prevalence of sexual offenses being committed by male juveniles, a shift to long-term institutional placement and specialized treatment programs is ongoing (Zimring, 2004).

A few studies have compared male and female juvenile sex offenders (Zimring, 2004). Although several similarities exist, differences are also notable. Female and male juvenile sex offenders have been found to have similar psychosocial developmental histories and characteristics related to prior criminal behavior, family, school, and peer relations (Zimring, 2004). A similar number of female and male juvenile sex offenders had previously been involved in mental-health treatment, had attempted suicide, and had run away from home (Oliver & Holmes, 2015).

Research indicates that many female and male sex offenders, who offend during adolescence, report having experienced sexual, physical, and/or emotional abuse and neglect (Oliver & Holmes, 2015), but female offenders tend to report higher rates of physical and emotional abuse and neglect than those reported by male offenders. Female offenders, who offend during adolescence, are also more likely to report being sexually abused by multiple perpetrators, to experience abuse at an earlier age than male offenders, and to have had at least one female abuser. In regard to offending, female offenders also tend to be younger when they commit their offense, where male offenders tend to be slightly older (Oliver & Holmes, 2015).

Another significant difference is that female offenders tend to commit sexual offenses with a co-offender, and male offenders tend to commit their offenses by themselves (Oliver & Holmes, 2015). In a study involving 17,337 adults from San Diego, California, Dube et al. (2005) found that among those who stated they had been sexually abused as a child, nearly 40% of men and 6% of women reported they had been subject to sexual abuse by a female perpetrator.

Juvenile Sex Offenders and Juvenile Delinquents

With regard to socio-demographic characteristics, juvenile sex offenders were found to be older than juvenile delinquents at the time of their first arrest (Ford & Linney, 1995; Jacobs, Kennedy, & Meyer, 1997). Juvenile sex offenders frequently come from disturbed family backgrounds (Bagley & Shewchuk-Dann, 1991; Barbaree, Marshall, & McCormick, 1998) and have a history of sexual abuse, which can be found in the majority of juvenile sex offenders, with prevalence rates ranging between 40 to 80% (Becker & Hunter, 1997); much lower rates of sexual abuse have been found among juvenile delinquents (Fagan & Wexler, 1989). Additionally, juvenile sex offenders are also shown to exhibit less externalizing and more internalizing behavior. They tend to be shy and immature and to score higher in loneliness, and lower in self-esteem, neuroticism, and depression when compared with juvenile delinquents (Bourke & Donohue, 1996; Carpenter, Peed, & Eastman, 1995; Monto, Zgourides, & Harris, 1998; Schram, Milloy, & Rowe, 1991). Notably, when comparing neurocognitive functioning, juvenile sex offenders are found to have an IQ lower than that of non-sex offenders (Aljazireh, 1993; Ferrara & McDonald, 1996; McCurry et al., 1998). This finding may have treatment implications because treatment modules often depend on the cognitive capacities of the individual. Even though many differences have been noted between juvenile sex offenders and juvenile delinquents, these two groups tend to have more similarities than when comparing adult

and juvenile sex offenders (Przybylski, 2010). Examining the similarities and differences between juvenile sex offenders and juvenile delinquents can assist in further understanding the risk factors for juvenile sex offenders and in identifying specific needs that should be addressed in treatment.

History of Sex Offender Treatment

Crimes involving sexual offenses have occurred as far back as biblical times, with punishment ranging from fines to death (Logue, 2012). During the 1930s, specific laws for sexual offenses were in place, with responses generally incorporating harsh punishments ranging from castration to death (Logue, 2012). As time progressed, punishment shifted to civil commitments as the primary tool for the treatment of sex offenders, although castration, registration, bans on pornography access, and the death penalty were still used as means to address sexually based crimes. As treatment was rarely provided for sex offenders during the 1950s, sex offenders often formed their own self-help groups when hospitalized. From the 1990s to present day, such punishment as prison sentences, civil commitments, the death penalty, and registration as a sex offender have been common; however, a shift has occurred toward treating sex offenders, particularly if they are juvenile sex offenders, as detention was not proving beneficial (Logue, 2012). Treatment is applied in some prisons/jails, in residential settings, and in the community through outpatient services (Logue, 2012).

Owing to the shift toward providing treatment to juvenile sex offenders, the development in creating specialized treatment programs has been significant. In 1975, only one treatment program for juvenile sex offenders existed in the United States, whereas in 2008, greater than 699 treatment programs were operating (Przybylski, 2010). In 2008, more than 23% of adolescents accounted for the juvenile offender population who were being treated in a sex-

offender-specific treatment program (Przybylski, 2010). Findings have been inconsistent as to whether sex-offender-specific treatment programs are effective; however, in recent years, research has suggested that therapeutic interventions for juvenile sex offenders can be effective (Przybylski, 2010; Worling & Curwen, 2000).

Brain Development and Functioning

While some similarities exist in the treatment of adult and juvenile sex offenders, consideration of the juveniles' developmental, motivational, and behavioral stages is vital to implementing effective treatment programs. Maturation of the brain, particularly the white and gray matter during adolescence, influences cognitive skills, reactivity to emotions and rewards, and greater development of self-control (Dumontheil, 2016). During adolescence, basic executive-functioning tasks include working memory, inhibition, relational reasoning, and impulse control, which are further developed as activation in the parietal cortex increases (Dumontheil, 2016). In one study, 38% of juvenile sex offenders had experienced behavioral problems, including impulse control and self-control issues in the home and school setting (Pierce & Pierces, 1987). Owing to all the changes occurring in an adolescent's brain and the development of executive function, therapeutic interventions and/or specialized treatment programs for juvenile offenders may need to be adapted appropriately (Dumontheil, 2016).

Cognitive functioning is yet another important aspect of juvenile sex offenders that may be necessary to consider in designing and implementing effective treatment. In a study conducted by Pierce and Pierces (1987), they found that 49% of juvenile sex offenders experienced academic difficulties, with 38% requiring placement in special classes and 14% being diagnosed with intellectual disabilities. Development in cognitive functioning continues during adolescence; however, "mature judgment is the product of not only cognitive capacity, but also

of emotional capabilities" (Tolan, Walker, & Reppucci, 2012, p. 126). Empirical support is substantial for the prevalence of cognitive difficulties among juvenile sex offenders and their impact on treatment (Bonner, Marx, Thompson, & Michaelson, 1998; Pierce & Pierces, 1987). Pierce and Pierces' (1987) study is consistent with past and present research studies suggesting treatment should be molded and adapted to treat juvenile sex offenders of all cognitive and emotional levels.

Risk Factors Associated with Sexual Offending

Extensive literature has developed and identified risk factors for juvenile sex offending (Przybylski, 2010). Static risk factors reflect historical behaviors and experiences related to sex offending; static risk factors cannot be changed. Dynamic risk factors are associated with current behaviors, thoughts, feelings, interactions, and relationships and can be adaptable and changed with treatment/intervention (Przybylski, 2010). Risk factors include sexual beliefs, attitudes, and drive; history of sexual-offense behaviors; history of personal victimization; personality and trait characteristics; social relationships; family relationships; and environment. The most common risk factors that appear to impact the occurrence of sex offenses and recidivism are family and social relationships, an individual's own victimization, executive functioning, personality characteristics, and the nature of an individual's own offense (Przybylski, 2010).

Family and Social Relationships

Adolescents who lack positive family and peer relationships often have more difficulties developing socially and emotionally than same aged peers who have positive role models. Social isolation is also viewed by Van Der Put, Van Vugt, Stams, Dekovic, and Van Der Laan (2013) and Worling and Langstrom (2006) as a risk factor of sex offenders as a result of limited social support and negative social interactions. One study found that 33% of juvenile offenders were

emotionally or physically abused, more than 50% had parents who were divorced, more than 50% were sexually abused, and more than 76% had been neglected either emotionally or physically (Smith & Monastersky, 1986). Bullying also plays a significant role in social relationships and can impact one's ability to develop or maintain positive peer interactions. Smith and Monastersky (1986) found almost half of the juveniles in their study had been harassed or bullied, and 89% had poor contact with their peers. Given the lack of social skills, many of these adolescents pursue friendships with younger children who do not require the same emotional connection and social understanding as their peers (Oxnam & Vess, 2006). Negative family and social relationships are also risk factors, as individuals who have limited positive interactions and relationships may learn to cope with their thoughts and emotions internally or in a maladaptive manner (Miner, 2002).

History of Victimization

A history of victimization is an additional risk factor. Whether emotional, physical, or sexual in nature, experiencing abuse can influence and even increase an individual's risk of offending and sexual recidivism. Van Der Put et al. (2013) found prior abuse, specifically sexual abuse, predicted sex offending and/or reoffending. In a sample of 68 juvenile sex offenders who were sentenced to residential treatment, Veniziano, Veniziano, and LeGrand (2000) found all 68 had been sexually victimized themselves. In the majority of these cases, the juvenile reenacted his or her own victimization or committed an offense similar to behaviors he or she had viewed in pornography. Research concludes the majority of juveniles who have been victimized and offend have learned these behaviors from what they had seen and/or experienced at home or in movies/pornography (Seto & Lalumière 2010; Van Der Put et al., 2013; Veniziano et al., 2000).

Executive Functioning

Deficits in executive functioning are also viewed as risk factors for juvenile sex offenders. As cited previously, Pierce and Pierces (1987) found almost half of juvenile sex offenders had academic and/or cognitive difficulties. Research conducted on the brain demonstrates that psychosocial development occurs much slower than cognitive development. Thus, juveniles have a lesser ability to manage emotions and control their behaviors than an adult with a fully developed brain (Scott & Steinberg, 2008; Tolan et al., 2012). Scientific evidence indicates significant differences between adult sex offenders and juvenile sex offenders in their abilities to plan ahead, regulate emotions, control behaviors, and consider future consequences of their actions. Because adolescents' brains are not fully developed, they are at an increased risk of committing a crime, especially a sexually based offense, if they exhibit some of the prior risk factors discussed.

Personality Characteristics

Additionally, personality and trait characteristics can be seen as risk factors for sexual offending. Three primary profile types appear to increase an individual's risk: hostile and aggressive, self-depreciative and internalizing, and individuals who score in the clinically significant range for behavioral and mental-health issues (Oxnam & Vess, 2006). The hostile and aggressive profile type indicates a tendency to act out sexually and physically with minimal provocation (Oxnam & Vess, 2006). The hostile and aggressive type may also be more likely to ignore the safety of others in order to meet personal needs and may have poor social awareness and insight. The self-depreciative and internalizing type reflects juveniles who are chronically insecure and avoid interpersonal contact. Those in this group tend to have a pessimistic outlook on life and to view themselves as worthless. Individuals who score in the clinically significant

range for behavioral and mental-health issues tend to have more mental-health issues that may go untreated and to experience emotional and/or behavioral symptoms as a result (Oxnam & Vess, 2006).

Offense History

Lastly, offenses themselves can serve as a risk factor to reoffending. Specific factors include the age of the victim, gender of the victim, relationship to the victim, first offense versus multiple offenses, attending treatment or detention, and successful or unsuccessful discharge from treatment (Rasmussen, 1999). For example, if a juvenile offends against a female victim multiple times and unsuccessfully discharges from treatment, his or her risk of reoffending increases (Rasmussen, 1999). If a juvenile offends against a child or an individual more than 3 years younger than him or herself or commits rape, he or she is also at an increased risk for reoffending (Rasmussen, 1999). While the validity of certain risk factors in predicting sexual recidivism varies, each juvenile must be evaluated on an individual basis, as his or her static and dynamic risk factors are unique and may impact risk of reoffending.

Risk Factors Associated with Unsuccessful Discharge and Recidivism

Even though treatment for juvenile sex offenders involves multiple forms of evaluation and has moved away from punitive detention, determining an individual's risk factors can be predictive of success in treatment and allow for a better understanding of an individual's risk of reoffending.

Unsuccessful Discharge

Unsuccessful discharge from treatment can be impacted by multiple events or behaviors. Juvenile sex offenders can be unsuccessfully discharged based on failing to adjust to treatment or exhibiting mental-health or behavioral difficulties, physically or sexually, that require a higher

level of care to stabilize before returning to treatment. Various factors can impact an individual's risk to unsuccessfully discharge from a specialized treatment facility. They include treatment implementation level and institutional, psychological, vocational, educational, and social adjustment (Kraemer, Salisbury, & Spielman, 1998; McGuire, 2002). Research suggests juvenile sex offenders who appear more psychologically maladjusted and have difficulties controlling their impulses are less likely complete treatment than same aged peers who have effective coping strategies and impulse control (Hamberger & Hastings, 1989; Kraemer et al., 1998). Defensiveness and young age were also associated with noncompletion of treatment (Gully, Mitchell, Butter, & Harwood, 1990; Robinson & Little, 1982; Shaw, Herkov, & Greer, 1995). Another risk factor associated with unsuccessful discharge from treatment was level of sexual obsessions and limited knowledge of sexuality observed on pretreatment measures. If the juvenile and his or her family do not partake in family therapy, the risk also appears to increase (Seabloom, Seabloom, Seabloom, Barron, & Hendrickson, 2003). Furthermore, when behavioral and cognitive-behavioral therapies were not the main treatment implemented, research suggested an increase in unsuccessful treatment. Unsuccessful discharge from treatment can be predicted through high psychological maladjustment, impulsivity, defensiveness, and levels of sexual obsession and limited sexuality knowledge are predictors for juvenile sex offenders to be (Gully et al., 1990; Hamberger & Hastings, 1989; Kraemer et al., 1998; Shaw et al., 1995). If treatment modalities were adjusted and specialized for the individual, treatment outcomes might improve.

Recidivism

One of the main predictors of recidivism seems to be unsuccessful discharge from treatment. As previously discussed, factors regarding the juvenile's initial offense can be viewed as a risk factor for recidivism. Approximately 70% of sexual recidivism takes place 1 to 3 years

after discharge, with higher prevalence occurring in the first few months after discharge (Hendriks & Bijleveld, 2008). Violent recidivism tends to be linked with the individual's ethnicity (i.e., Caucasians tend to have higher rates of violent recidivism when compared to other ethnicities), level of parental neglect, quality of peer relationships, and classification by treatment providers as an opportunistic offender (Hendriks & Bijleveld, 2008). Sexual recidivism seems to be related to having a young female victim and having a victim outside of the immediate family, but known through school or social affiliations (Hendriks & Bijleveld, 2008). Age of first offense can also impact an individual's risk of reoffending, as can the degree of violence used and sexual deviation exhibited by the offender (Hendriks & Bijleveld, 2008). Notably, juveniles who have a below-average IQ or lower-than-average cognitive abilities are more at risk for sexual recidivism than same aged peers with average IQs (Hendriks & Bijleveld, 2008). Juvenile sex offenders who successfully discharge from treatment and have positive supports, such as parents or positive peers, significantly lower their risk of sexual recidivism (Hendriks & Bijleveld, 2008; Seabloom et al., 2003).

Juvenile Sex Offender Assessments

In attempts to evaluate risk factors and implement specialized treatment, various assessments are used to better understand juveniles and their risks. Juvenile risk assessments were originally largely based on adult-sex-offender measures. In the last decade, juvenile risk assessments have developed to focus specifically on juvenile populations, taking into account their unique developmental factors. These instruments are used to identify and assess risk factors, as well as protective factors, that might mitigate risks for sexual recidivism. Notably, these instruments are primarily designed for male juveniles, as they commit a large majority of juvenile sex offenses

Actuarial and Clinical Assessments

Currently, two models are used in juvenile risk assessments: the actuarial model and the clinical model (Przybylski, 2010). The assessment process is the same in both models and attempts to identify and evaluate the effects of risk factors believed to be associated with sex offending (Przybylski, 2010). The actuarial model is referred to as a statistical or mechanical assessment and aims to determine risk based on statistical comparisons of personal characteristics and past behaviors and those known to reoffend (Przybylski, 2010). This model assesses primarily static risk factors previously discussed. The clinical model is based on observation and professional impressions and attempts to develop an understanding of the juvenile and the effect of dynamic and static risk factors, as well as of protective factors. While the clinical model is used in conjunction with the actuarial model, strong evidence shows that the actuarial model has the capacity to predict risk more accurately than the clinical model alone (Hanson & Thornton, 2000; Harris & Rice, 2007; Meehl, 1996; Quinsey, Harris, Rice, & Cormier, 1998; Steadman et al., 2000).

The most commonly used clinical-model assessments are the Juvenile Sex Offender Assessment Protocol-II (J-SOAP-II) and the Estimate of Risk of Adolescent Sexual Offense Recidivism (ERASOR; Przybylski, 2010). The only actuarial assessment used at present is the Juvenile Sexual Offense Recidivism Risk Assessment Tool-II (JSORRAT-II). The J-SOAP-II, ERASOR, and JSORRAT-II have each been generally reported to have interrater reliability (Caldwell, Ziemke, & Vitacco, 2008; Knight, Ronis, & Zakireh, 2009; Martinez, Flores, & Rosenfeld, 2007; Parks & Bard, 2006; Viljoen et al., 2008). In terms of predictive validity, while some empirical support exists for J-SOAP-II, ERASOR, and JSORRAT-II, the instruments do not perform in a manner that proves their ability to accurately predict juvenile sexual recidivism

(Caldwell et al., 2008; Viljoen et al., 2008). Juvenile-risk-assessment instruments may be insufficient to make predictions that require a high degree of precision, as in situations when the civil commitment of juveniles who commit sexual offenses or the placement of juveniles on lifetime sexual offender registries is at stake without additional information, such as clinical interviews, detailed histories, and other assessment tools (Caldwell et al., 2008; Viljoen et al., 2008; Vitacco et al., 2009). Each assessment is also considered valid; however, the JSOAP-II appears to be the most valid among the three. The J-SOAP-II is a checklist designed to aid in the systematic review of risk factors that have been identified in the professional literature as being associated with sexual and criminal offending. The J-SOAP-II is designed for male juveniles in the age range of 12 to 18 years who have been adjudicated for sexual offenses, as well as for nonadjudicated youth with a history of sexually coercive behavior. The interrater reliability for all items except for Caregiver Instability was good to excellent, ranging from .75 to .91, with an average interrater reliability of .83. The reliability for Caregiver Instability was poor (.59), and that item has since been revised. In addition to the ERASOR, J-SOAP-II, and JSORRAT-II, empirically based state-specific juvenile-risk-assessment instruments are currently in use. New Jersey, Texas, and Wisconsin use various assessments specific to their state: Texas' Juvenile Sex Offender Risk Assessment Instrument; New Jersey's Juvenile Risk Assessment Scale: JRAS; and Wisconsin's Wisconsin Department of Corrections Guidelines for Release (Przybylski, 2010).

Executive-Functioning and Behavioral Assessments

In addition to actuarial and clinical assessments, many treatment programs for juvenile sex offenders also incorporate executive-functioning and personality/behavioral assessments to increase an understanding of the individual. For a subset of adolescents their limited/lower levels

of cognitive abilities may result in an increased risk for sexual offending (Cantor et al., 2005; Hunter, 1993; Scott & Steinberg, 2008; Tolan et al., 2012). Because of an apparently high percentage of juvenile sex offenders with limited cognitive abilities, this factor is important to explore, as treatment and recidivism can both be impacted. The most widely used intellectual assessments are the Wechsler Adult Intelligence Scale-IV (WAIS-IV) and the Wechsler Intelligence Scale for Children-V (WISC-V), which contain subtests that measure working memory, verbal IQ, perceptual reasoning, and processing speed (Bonner et al., 1998). The WAIS-IV is used for individuals 16 years old and older, and the WISC-V is used for individuals 15 years old and younger.

Personality and behavioral assessments are also used to obtain information regarding an adolescent's personality development and insight into behavioral problems to guide treatment (Bonner et al., 1998; Cantor et al., 2005). Some of the most frequently used personality assessments are the Minnesota Multiphasic Personality Inventory-2 (MMPI-2), the Jesness Inventory (JI), and the Psychopathy Checklist Revised (PCR) (Cantor et al., 2005). The Child Behavioral Checklist (CBCL), the Beck Depression Inventory-II (BDI-II), and the Symptom Checklist-90 Revised (SCL-90) are three commonly used behavioral and symptom assessments for juvenile sex offenders (Cantor et al., 2005). Family functioning, social skills, and self-esteem are other commonly assessed domains in juvenile sex offenders through various assessment measures, depending on the specific treatment facility.

Treatment of Male Juvenile Sex Offenders

Treatment of juvenile sex offenders has greatly advanced since the years when consequences were purely punitive and did not incorporate treatment. As previously mentioned, specialized treatment facilities have been viewed as more effective than detention. Residential

treatment facilities have been adapted from a detention and correctional model to one of safety and intervention (Goocher, 1994). These programs for juveniles view the offender as having committed a criminal act in which legal retribution and the acceptance of personal accountability are of the most importance (Goocher, 1994). An emphasis is placed on self-disclosure and developing strategies to prevent relapse. Focus in treatment is also placed on personal responsibility, maintaining boundaries, and conducting oneself in an appropriate manner (e.g., trading of personal items is prohibited and engaging in grooming behaviors is expected; Goocher, 1994).

The Association for the Treatment of Sexual Offenders (ATSO) reported significantly lower incidence of sexual aggression, fantasy, and compulsivity among juvenile sex offenders than among adult sex offenders, further implying that juveniles displaying sexual behavioral problems have a greater chance than adults of improving their behaviors with intervention (Finkelhor, Ormrod, & Chaffin, 2009). ATSO recommends juvenile sex offenders be treated through high-quality, juvenile-specific, community-based treatment as an alternative to the adult criminal-justice system whenever possible. Treating juveniles in the juvenile justice system rehabilitates them more effectively, reduces recidivism, and saves taxpayer money. For example, intensive supervision and treatment for sex offenders is estimated to cost $5,000 per year, whereas incarceration in a detention facility costs more than $20,000 per year (Finkelhor et al., 2009).

In the 1980s, only 20 identified programs were available for juvenile sex offenders nationally; as of 2015, the number changed to more than 900 treatment programs. Most of these treatment programs for juveniles are community based, although a sizable number are residential or institutional treatment programs. The National Center on Sexual Behavior of Youth (NCSBY)

suggests juvenile sex offenders can be treated successfully through weekly outpatient group treatment lasting 8 to 28 months (Finkelhor et al., 2009). Programs for juvenile sex offenders provided treatment to nearly 20,000 sexually abusive youth and almost half of those 20,000 youth were treated in residential programs. Adolescents who need more intensive treatment modalities may be court ordered to attend one of the residential facilities (Hawkins et al., 1998).

Community-Based Treatment

Community-based treatment allows juveniles to remain in the community living with or close to family, to continue attending the same school, to develop or maintain prosocial peer relationships, and to practice competencies in their natural environment (Hawkins et al., 1998). It is often less costly than residential treatment programs. Community-based treatment tends to be less intensive than residential treatment because it is conducted in the community usually only once or twice per week. However, juvenile sex offenders may have greater access to their prior victim/s or may be more vulnerable to high-risk situations when being treated in the community (McGrath, Cumming, Hoke, & Bonn-Miller, 2007). If juvenile sex offenders are at too high of a risk to reoffend, residential treatment may be encouraged.

Residential Treatment

Residential treatment provides intensive treatment modalities in which individuals are exposed to a therapeutic environment around the clock. It provides additional structure and supervision for juvenile sex offenders who post a danger to themselves or others and ensures their safety and the community's safety while encouraging the juvenile to be accountable for his or her behaviors (Hawkins et al., 1998). For juveniles who demonstrate an unwillingness to comply with treatment or supervision in the community, residential placement can provide an intensive setting to emphasize the seriousness of their behaviors, while still offering an

opportunity to address their treatment needs (McGrath et al., 2007).

Community-based and residential treatment programs have their pros and cons. Community-based programs allow individuals to be treated in the community, but place them at a higher risk of offending and may place others, such as their victims or potential victims, in danger (Ryan & Lane, 1997). In the community, juvenile sex offenders encounter risks that will test their progress in treatment, and they can actively apply coping skills in the real world where they will likely spend the majority of their time. On the other hand, residential programs are more costly than community-based programs and can potentially expose juveniles to more deviant peers, possibly negatively impacting their own development and progress. Higher costs may undermine the benefits of residential treatment; however, residential facilities also provide intensive treatment and supervision (McGrath et al., 2007).

Individual, Group, and Family Therapies

Treatment for male juvenile sex offenders is generally provided in either outpatient therapy or residential treatment facilities within three general modalities: individual, group, and family therapies (Ryan & Lane, 1997). Not all juvenile sex offenders require residential treatment; however, many factors are evaluated prior to determining whether a juvenile should attend outpatient or residential treatment. Some juveniles pose greater risk than others, have more treatment needs, are more amenable to treatment, or may have more supportive and stable families, all of which can impact the type of treatment recommended. Because treatment needs are very different, assessment is pertinent, as discussed previously, in deciphering the type of treatment warranted. If a juvenile has behavioral disturbances, aggression, longstanding patterns of sexual deviance, and/or resides in a chaotic environment, residential treatment may be necessary (Ryan & Lane, 1997). If a juvenile has a more stable living environment, has a limited

number of sexual behavioral problems, and is motivated to change, outpatient treatment may be more suitable (Ryan & Lane, 1997).

Individual and group therapy modalities, in outpatient therapy and residential treatment, focus on the discussion and exploration of juvenile sex offenders' offenses, thinking errors, precursors to their offenses, family dynamics, relapse prevention, and other information relating to and from their offenses. Juvenile sex offenders also are encouraged to provide feedback to their peers and be open to receiving feedback themselves during group therapy. If the offenders' families are engaged in their children's lives, family therapy is also conducted. Family sessions focus on family dynamics and emotions emerging from their adolescent offending, developing insight into understanding attitudes and beliefs held by the adolescent, developing more appropriate ways of communicating, and encouraging the family to play a supportive active role in the adolescent's recovery.

Behavioral Management

Residential programs often place emphasis on accountability and reward. The aim is to hold juvenile sex offenders accountable for their negative behaviors and reward their positive behaviors and interactions (Ryan & Lane, 1997). Daily point systems, behavioral plans, and reward systems are often used to increase positive behaviors and decrease negative behaviors. Juvenile sex offenders also are expected to create daily and monthly goals that, if achieved, will advance their progression in treatment and allow for additional privileges (Ryan & Lane, 1997). Behavioral plans are also implemented if offenders exhibit negative behaviors and need additional structure. Interventions are implemented to address these behaviors and are individually adapted to meet the individual's needs (Ryan & Lane, 1997). These plans follow a progressive, intervention model, including redirection through verbal requests, staff-directed

time-outs, and therapeutic restraints if the juvenile sex offender is at risk of harm or is harming others.

Aversive Conditioning

Aversive conditioning is also used in the treatment of juvenile sex offenders in specialized programs, in both outpatient and residential settings. Sexual fantasies and deviant thoughts often pose a risk of triggering sex-offending behaviors; consequently, sexual fantasies and deviant thoughts are a focus of treatment. Vanhoeck, Van Daele, and Gykiere (2011) found four types of fantasies: normal fantasies, bold fantasies, fantasies about sexual irresistibility, and fantasies of domination. Aversion therapy is designed to cause individuals to develop a dislike or feeling of disgust to the behavior or fantasy as they begin to develop an association between the behavior and aversive stimulus. Electrical shock, chemical stimuli, olfactory or gustatory stimuli, and covert sensitization are all used in aversive conditioning of sex-offending behaviors (Knopp & Stevenson 1990; Vanhoeck et al., 2011). Because many juvenile sex offenders have been abused themselves, eye movement desensitization reprocessing (EMDR) is also used to help decrease deviant sexual fantasies (Vanhoeck et al., 2011). EMDR is a specialized procedure implemented by trained therapists to create a safe place to which juvenile sex offenders can escape when unwanted fantasies overwhelm them (Vanhoeck et al., 2011). It assists offenders in understanding the circle that exists between fantasies, masturbating, arousal, and orgasm reinforcement and allows them to create an imaginary safe place. Aversion therapies and EMDR may not be useful for every offender in treatment, but they can be helpful therapies to decrease deviant arousal and maintain control over sexual fantasies (Vanhoeck et al., 2011).

Medications

Medications, while not always used, can be beneficial to treat juvenile sex offenders, particularly those who have mental-health symptoms (Knopp & Stevenson 1990; Vanhoeck et al., 2011). Vanhoeck et al. (2011) reported effective results for hormonal treatments; Van Hunsel and Cosyns (2002) also described several studies that reported a significant reduction in the impact of sexual fantasies as a result of medications. Research suggests juvenile sex offenders can be treated with selective serotonin reuptake inhibitors and luteinizing hormone release hormone antagonists. As medications can be effective, medical and psychology professionals recommend medication management be accompanied by therapy (Knopp & Stevenson, 1990; Vanhoeck et al., 2011). While specialized treatment centers may use a combination of treatments to improve outcomes and decrease recidivism, they all place an emphasis and focus on relapse prevention, understanding the cycle of abuse, sincere victim empathy, accepting full responsibility, emotional development, and improving social skills.

Treatment Goals

There are several key treatment goals for juvenile sex offenders. Juveniles are not fully expected to acknowledge their problem behaviors when they first enter treatment; however, through participating in treatment over time they are expected to take full responsibility for their sex offenses and problematic behaviors (Ryan & Lane, 1997). Once juvenile sex offenders take responsibility for their actions, the goal becomes developing motivation to change their prior behaviors. Responsibility may consist of acknowledging their risk factors to offending or problematic behaviors or cycles they may succumb to prior to offending. After juvenile sex offenders recognize their risks and cycle, the offenders are provided with coping skills and ways of intervening in the future to stop themselves before engaging in the problematic behavior

(Ryan & Lane, 1997). Other treatment goals are to develop prosocial skills and competencies, effective communication styles, positive ways to express their feelings, consideration of other people's feelings, and healthy social interactions (Ryan & Lane, 1997). Juveniles' treatment goals must extend beyond themselves and address multiple determinants of sex offending and problematic behaviors. Additional goals of treatment focus on assisting with establishing positive peer relationships and promoting healthy family functioning. When these goals are accomplished, the juvenile sex offender may attend a step-down program to a less intensive treatment modality, such as to a less secure residential program or to attend sessions less frequently if attending outpatient programs (Ryan & Lane, 1997).

Need for Improving Treatment

Treatment should be adapted to the needs of the juvenile sex offender, as research shows tailored interventions are generally more effective than interventions designed for a whole group that are not individualized (Hawkins et al., 1998). Lower levels of executive functioning are common among juvenile sex offenders and may be a risk of reoffending. Hyun, Hahn, and McConnell (2014) found nearly 60% of individuals in the adult criminal-justice system had learning disabilities and/or below-average executive functioning. Awad and Saunders (1991) found between 30 to 60% of juvenile sex offenders had learning disabilities, academic dysfunction, or below-average levels of executive functioning. Juvenile sex offenders with executive-functioning deficits are more likely to offend against peers and strangers than are adolescents with cognitive--functioning levels within the normal range, who tend to offend against one population (Awad & Saunders, 1991). Juveniles and adults with below-average executive-functioning levels tend to commit less serious crimes, serve short sentences, and have much higher rates of recidivism; therefore, improved treatment is needed (Hyun et al., 2014).

Juvenile sex offenders are often treated using a one-size-fits-all approach. The one-size-fits-all approach may be counterproductive for juveniles with lower executive functioning or who may not be able to grasp abstract concepts or apply concepts to their own experiences. Treatment modalities should be structured to juvenile sex offenders' learning capabilities and be adapted to ensure they understand the information. Schram et al. (1991) conducted a longitudinal study examining risks for reoffending and rearrest rates for juvenile sex offenders. They surveyed each juvenile through a database examining treatment delivery, with supplemented information on subsequent arrests and convictions during a 5-year follow-up period (Schram et al., 1991). Results suggested that juveniles who had lower executive-functioning levels, school problems, and difficulty identifying thinking errors were more likely to reoffend than same aged peers who had average levels of executive functioning levels and limited to no difficulties in a school setting (Schram et al., 1991). Those with higher levels of executive functioning who had less contact with the juvenile system prior to their current arrest were more likely to complete treatment and be successful upon release when compared to same aged peers who have had prior involvement with the juvenile system (Schram et al., 1991). Lindsay, Olley, Baillie, & Smith (1999) also found similar results when they conducted a study assessing four juvenile adolescent sex offenders who had varying cognitive capabilities and executive-functioning levels. Treatment was based on the same concepts but structured to the juvenile sex offender's learning needs and individualized to ensure the adolescent understood the information. All four adolescents responded to treatment successfully, a result researchers attributed to the individualized treatment that met each adolescent's executive-functioning level (Lindsay et al., 1999). Because assessments of juvenile sex offenders are increasing and more information is known about juvenile sex offenders' functioning, adjusting treatment modalities and delivery to

meet their cognitive needs is necessary to ensure successful understanding and application of the material in hopes of improving outcomes upon release.

Executive Functioning

Executive-functioning assessments are administered to assess juveniles who enter the criminal-justice system. Executive-functioning assessments assess cognitive capabilities by measuring intelligence, emotional regulation, flexible thinking, verbal capabilities, working memory, and impulse control. These domains are assessed using a variety of instruments.

Cognitive Functioning

Studies during the past few decades further support the need to adjust treatment for juvenile sex offenders, specifically those with lower cognitive functioning and lower IQs. Cognitive functioning is most commonly assessed by prospective versions of the WISC and the WAIS. The intelligence scales evaluate an individual on different domains: verbal comprehension, perceptual reasoning, working memory, and processing speed. Ford and Linney (1995) observed a longstanding educational problem among juvenile sex offenders particularly within their lower-than-average intellectual functioning; longstanding educational problems are also seen in sex offender treatment facilities. Similarly, Fehrenbach, Smith, Monastersky, and Deisher (1986) indicated fewer than 55% of juvenile sex offenders were in the appropriate grade placement. Ferrara and McDonald (1996) and later Van Wijk, Vreugdenhil, Van Horn, Vermeiren, and Doreleijers (2007) reported one quarter to one third of juvenile sex offenders have neurological impairments that affect their intellectual functioning. These studies further solidify the need to assess and treat juvenile sex offenders individually, as treatment not adjusted to their intellectual and cognitive abilities will likely have a greater chance of resulting in unsuccessful discharge from treatment and in reoffending (Fehrenbach et al., 1986, Ferrara &

McDonald, 1996; Ford & Linney, 1995).

Verbal IQ

The Verbal Index on the WISC-IV/V and WAIS-IV reflects an individual's ability to understand, use, and think with spoken language. It demonstrates the breadth and depth of knowledge acquired from one's environment. The Verbal Index also measures the retrieval from long-term memory of such information. The Verbal Index is one of four psychometric constructs that are considered important in helping understand an individual's learning abilities as seen in the WISC-IV/V or WAIS-IV. Verbal IQ is closely related to overall IQ and executive-functioning performance (Kelly, Richardson, Hunter, & Knapp, 2002). In addition to being a strong predictor of overall IQ, verbal IQ can also be predictive of social cognitive abilities, particularly in adolescents. For example, research shows individuals with higher verbal IQs will have a higher overall IQ and stronger social cognitive abilities (Kelly et al., 2002).

Processing Speed

Processing speed examines the speed in which a person can carry out simple or automatic cognitive tasks; processing speed is measured under time pressure such that a degree of focused attention is involved. Other brain functions, such as perception and motivation, also impact a person's ability to process information quickly and efficiently. Juvenile sex offenders in comparison with same-aged peers who have not committed a sex offense showed significant weaknesses in their processing speeds (Kelly et al., 2002). Processing-speed deficits could impact a juvenile sex offender's ability to process and understand treatment modalities if not adapted to the individual's abilities (Kelly et al., 2002).

Working Memory

Working memory assists individuals in processing and remembering information. Processing speed is also involved in working memory and impacts an individual's ability to carry out simple or automatic cognitive tasks in a quick manner. Working memory impacts an individual's ability to process information, remember the information, and recall it quickly and accurately. Working memory is associated with an individual's IQ score and executive-functioning level, as it affects information processing and recalling. Juvenile offenders showed impaired executive functioning on tasks of working memory and spatial working memory, which impacts an individual's ability to process information and communicate (Zou et al., 2013). Because working memory impacts an individual's ability to learn as well, it should continue to be a focus of assessing juvenile sex offenders (Lynn & Vanhanen, 2012; Zou et al., 2013).

Impulse Control

Evidence suggests juvenile sex offenders may differ in terms of intelligence across subgroups of offenders, as well as across the general population (Riser, Pegram, & Farley, 2013). These individuals tend to display school-related behavioral and academic issues, truancy, learning disabilities, disruptive classroom behavior, and attention deficits (Riser et al., 2013). Impulse control helps individuals think before speaking or physically performing a task and in controlling their behaviors. Juvenile sex offenders who commit an array of sexual offenses that are not isolated events are suggested to have behavioral and impulse difficulties (Fehrenback et al., 1986). Specifically, 63% of incarcerated juvenile sex offenders scored below average on a measure of skill in controlling anger versus 26% of delinquents who had not committed a sexual offense (Van Ness, 1984). Age and impulsivity were observed to directly impact an individual's ability to complete treatment and to increase risk of reoffending (Kraemer, Salisbury, &

Spielman, 1998). Overall, increased risk for reoffense was associated with impulsivity, involvement with significantly younger children, younger age at first offense, and shorter treatment stays (Miner, 2002). For the purpose of the present study, the Integrated Visual and Auditory Continuous Performance Test (IVA) will be used to measure impulse control.

Impact of Executive Functioning on Treatment Outcomes

Treatment completion appears to be impacted by juvenile sex offenders' static and dynamic risk factors and their executive-functioning abilities. As previously discussed, verbal IQ, processing speed, working memory, and impulse control may impact treatment completion and recidivism. Juvenile sex offenders who unsuccessfully discharge from treatment tend to have lower levels of executive functioning, a finding that should be further investigated. Having lower executive-functioning abilities can impact an offender's ability to successfully comprehend treatment modules, follow directions and abide by the rules, and maintain emotional and physical control. Youth failing to comply with and complete treatment are also found to have higher overall levels of measured sexual maladjustment and may be at greater long-term risk for sexual recidivism (Hunter & Figeuredo, 1999). Offenders who fail to complete treatment may be at higher risk for reoffending than those who complete treatment (Hanson & Buissiere, 1998).

Chapter 3: Purpose of Study

This study examined the relationship between executive functioning, (i.e., verbal IQ, working memory, processing speed, impulse control) and treatment completion and recidivism among male juvenile sex offenders. The aims are consistent with empirical research, which has demonstrated a need to further investigate executive functioning as a predictor of recidivism among male juvenile sex offenders. The primary hypothesis stated juvenile male sex offenders with higher levels of executive functioning will be more likely to successfully complete treatment. To test this hypothesis, a logistic regression analysis was conducted with the four independent variables inputted in a non-step-wise model. The secondary hypothesis stated that juvenile male sex offenders with higher executive functioning will be less likely to recidivate during a 5-year period following discharge from residential treatment. To test this hypothesis, a logistic regression analysis was conducted with the four independent variables inputted in a non-step-wise model. The WISC-IV/V and WAIS-IV were used to determine verbal IQ, processing speed, and working memory. The IVA was used to determine impulse control. Findings from this research may allow researchers, treatment professionals, and stakeholders to better understand the relationship between executive functioning and treatment outcomes/recidivism and serve to improve and advance treatment services.

Research Questions

Does executive functioning, specifically verbal IQ, processing speed, working memory, and impulse control, impact treatment completion among male juvenile sex offenders?

Does executive functioning, specifically verbal IQ, processing speed, working memory, and impulse control, impact recidivism among male juvenile sex offenders.

Rationale

Treatment for juvenile sex offenders must be improved to be able to identify additional risk factors and develop treatment that is specific to the individual. Research has shown that male juvenile sex offenders have difficulties in their executive-functioning abilities; however, the research is fairly outdated and did not exam the impact of executive functioning on treatment outcomes, a determination that is vital, as these abilities could impact treatment effectiveness and outcomes. Executive functioning is a key factor in decision making, impulse control, considering alternative actions, processing consequences, prioritizing, task initiation, and organization skills. Adolescents' brains are still developing during their teen years, as well as into their early twenties; brain development affects their executive-functioning abilities, as they do not have fully developed frontal lobes. For example, adolescents in treatment programs for juvenile sex offenders may have difficulties controlling their impulses; they may speak out of turn in group settings or may act on their thoughts before thinking through the consequences. Executive-functioning deficits may contribute to higher risk potential and recidivism among juvenile sex offenders.

Hypotheses

The primary hypothesis stated juvenile male sex offenders with higher levels of executive functioning (i.e., verbal IQ, working memory, processing speed, impulse control) would be more likely to successfully complete treatment.

The secondary hypothesis stated juvenile male sex offenders with higher levels of executive functioning (i.e., verbal IQ, working memory, processing speed, impulse control) would be less likely to recidivate during a 5-year period after discharge.

Chapter 4: Methods

Design Overview

This study examined the relationship between executive functioning, particularly verbal IQ, processing speed, working memory, and impulse control, among male juvenile sex offenders impacts treatment outcomes. The study examined the relationship between executive functioning and treatment completion and 5-year recidivism among male juvenile sex offenders. The study used a nonexperimental, archival research study in which all data were deidentified and collected between 2007 and 2012; the director of a suburban residential treatment facility provided data. A logistic regression analysis was conducted to determine if one or more of the independent variables impacted or predicted the two dependent variables. The independent variables were chosen from previous literature, which found the aforementioned variables were predictive of juveniles who committed sex offenses. Multiple logistic regressions were conducted to see how the selected variables impact a juvenile sex offender's treatment completion and 5-year recidivism. As the present study was an archival analysis involving deidentified information, it did not require an informed consent. No communication was made between the research associate and the participants for the purpose of the present research study. The study was deemed eligible for an expedited review by the Institutional Review Board and was approved without revisions.

Setting

The suburban residential treatment facility from which the data were analyzed for this study is a residential treatment program for adolescent male sex offenders ranging from 12 to 21 years old. Juveniles are court ordered to the residential treatment facility for sex offender treatment. Residents of the facility are from diverse ethnic and socioeconomic backgrounds.

Common crimes committed by the residents are peeping, sexual assault, rape, statutory rape, fondling, and nonforcible sex offenses. Most residents are adjudicated and found guilty of their crime by the judge or court system. Some residents from this facility are not adjudicated but are court ordered to attend treatment given their high risk of offending. Residents are made aware upon admittance that data will be collected from various domains in order to analyze and improve treatment outcomes.

Inclusion and Exclusion Criteria

For this archival study, inclusion criteria consisted of being a juvenile sex offender between 12 to18 years old, being court ordered for sex offender treatment to the suburban treatment facility, and having committed an offense and entered the program prior to one's 18th birthday. Study participants had to have been discharged, either successfully or unsuccessfully, by December 2012 to allow for data to be collected on 5-year recidivism. In addition, juvenile sex offenders had to have completed the WISC-IV/V or WAIS-IV and IVA. Participants who did not have WISC-IV/V or WAIS-IV and IVA data collected and/or who committed their offense and/or entered treatment after their 18th birthday were excluded from the study, as the primary focus is executive functioning within juvenile sex offenders. Juveniles who did not have 5-year outcome data provided were also excluded from the study, as recidivism was examined. Juvenile sex offenders who were diagnosed with schizophrenia, psychosis, or delusional disorder were also excluded. No exclusion was made for race or intellectual ability.

Recruitment

All participant data were deidentified prior to being made available to the researcher. The sample was provided from archival data and originally included 151 male juvenile sex offenders between the ages of 12 to18 years old. Eighteen individuals were omitted, as they did not have

outcome data provided, and only five of the 18 had treatment completion information provided. An additional 56 participants were omitted from the study, as they did not have one or more scores for the independent variables (i.e., verbal IQ, processing speed, working memory, or IVA score). From those 77 participants, three were missing recidivism data and one was seen an extreme outlier, as his working memory score was 30+ points higher than the highest score; therefore, 73 participants were retained in the study and had met all criteria.

Measures

WISC-IV/V and WAIS-IV

The WISC-IV/V and WAIS-IV were used to assess intellectual functioning. The WISC-IV/V is an individually administered intelligence test for children between the ages of 6 and 16 years. It generates a Full Scale IQ, which represents a child's general intellectual ability. It also provides five primary index scores (i.e., Verbal Comprehension Index, Visual Spatial Index, Fluid Reasoning Index, Working Memory Index, and Processing Speed Index), which represent a child's abilities in more discrete cognitive domains. The WAIS-IV is an IQ test designed to measure intelligence and cognitive ability in adolescents older than 16 years and in adults. The WAIS-IV is similar to the WISC-IV/V in that it includes four primary index scores (i.e., Verbal Comprehension Index, Working Memory Index, Processing Speed Index, and Perceptual Reasoning Index). The WAIS-IV is a well-established assessment and has fairly high consistency. Over a 2- to 12-week time period, the test-retest reliabilities ranged from 0.70 (7 subscales) to 0.90 (2 subscales; American Educational Research Association et al., 2014). Inter-scorer coefficients were very high, all being above 0.90 (American Educational Research Association et al., 2014). The WAIS-IV correlated highly with the Stanford-Binet IV test (0.88) and had high concordance with various measures: memory, language, dexterity, motor speed,

attention, and cognitive ability (American Educational Research Association et al., 2014).

The WISC has been revised frequently over the last 7 decades to incorporate advances in the field of intellectual assessment, to update norms that reflect population changes, to update item content to reflect changes in culture and technology, and to meet the practical and clinical needs of contemporary society (American Educational Research Association et al., 2014). The WISC-IV dropped three subtests that appeared on the WISC-III. Ten of the subtests were retained with revised item content and scoring procedures, and five new subtests were developed (American Educational Research Association et al., 2014). The revision goals for the WISC-V were generally to consider advances in structural models of intelligence, cognitive neuroscience, neurodevelopmental research, psychometrics, and contemporary practical clinical demands (American Educational Research Association et al., 2014). Several of the new subtests of the WISC-V are based on subtests appearing on either the WAIS or the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) that have already been well researched (American Educational Research Association et al., 2014).

For the purpose of this study, Verbal Comprehension (Verbal IQ), Working Memory, and Processing Speed Indices were examined. The Verbal Comprehension Index reflects an individual's ability to understand, use, and think with spoken language. The Working Memory Index measures the individual's ability to register, maintain, and manipulate visual and auditory information in conscious awareness. It also measures an individual's speed and accuracy of visual identification, decision making, and decision implementation. The Processing Speed Index measures an individual's speed and accuracy of visual identification, decision making, and decision implementation.

IVA

The IVA was used to assess impulsivity. The IVA is a short, EEG-validated, computerized test that measures both visual and auditory impulsivity and inattention. The IVA provides in-depth information about the individual's attentional functioning and impulse control (Brain Train, Inc., 2018). Validity research using the IVA with children aged 7 to 12 years had a sensitivity of 92% in identifying individuals diagnosed by a clinician as having attention deficit hyperactivity disorder (ADHD) and difficulties with impulse control (Brain Train, Inc., 2018). Another validity study for a typical mixed-age clinical population (aged 6-55 years) found that as part of a clinician's comprehensive psychological evaluation, the combination of the ADHD rating scale data with the IVA decision support guidance matched the independent clinical diagnosis 90% of the time (Brain Train, Inc., 2018). In addition, this study showed that the IVA decision support analysis correctly classified individuals who did not have ADHD/impulsivity difficulties 89% of the time (Brain Train, Inc., 2018). Results provide insight into learning styles and response patterns, and the visual graphs provide a clear, concrete picture of measurable data (Brain Train, Inc., 2018).

Constructs of Interest

Male Juvenile Sex Offenders

For the purpose of this study, male juvenile sex offenders can be defined as male individuals between the ages of 12 to 18 years who have committed a sexual-based crime before their 18th birthday and have been admitted to the examined suburban residential treatment facility.

Executive Functioning

Executive functions are a set of cognitive processes, including attentional control,

inhibitory control, working memory, and cognitive flexibility, as well as reasoning, problem solving, and planning, that are necessary for the cognitive control of behavior. For the purpose of this study, executive functioning was examined by assessing verbal IQ, working memory, processing speed, and impulse control.

Treatment Completion

Treatment completion at the suburban residential treatment facility is defined as completing all aspects of treatment, including sex-offender-treatment assignments, engaging in group and individual therapy, engaging in family therapy if indicated, passing polygraph examinations, and/or making necessary behavioral changes. It can include discharging to a step-down program, a foster home, a group home, reunification with family, and/or other placements that are indicated for successfully discharged offenders.

Unsuccessful Discharge

Unsuccessful discharge from treatment from the examined suburban residential treatment facility is defined as being discharged from treatment prematurely either because of failing to adjust to treatment or because the offenders' mental-health or behavioral difficulties made involvement in treatment unsafe for themselves or others. They may require an additional level of care to stabilize their behaviors before returning to attempt to successfully complete treatment.

Recidivism

Recidivism is the act of a person repeating an undesirable behavior after they either had experienced negative consequences of that behavior or had been trained to extinguish that behavior. For this study specifically, recidivism was defined as getting arrested for committing a criminal offense, including sexual and nonsexual offenses, after being discharged from sex offender treatment. Recidivism outcomes included both successful and unsuccessful discharge

from the program for a better understanding of the executive-functioning domains and the impact on reoffending. Five-year recidivism data were reviewed.

Procedure

The R.O.R.E. is a collective database that holds all data collected at the suburban residential treatment facility. The R.O.R.E. involves psychometric data collection using scientifically accepted and construct-valid instruments and is a recent adaptation of a longstanding research initiative. Information is gathered from psychological test data, self-ratings, and observer ratings and is used for the purposes of identifying patterns of attitude and behavior relevant to treatment targets. R.O.R.E. data also serve to inform case conceptualization and treatment planning, with pretreatment and predischarge comparison serving to measure treatment impact and inform aftercare planning. Ultimately, data yield valuable information comparing treatment targets and treatment gains to outcome criteria via inpatient outcome tracking. Domains to be assessed within juvenile sex offenders are concomitant with empirically indicated risk factor areas for this population and involve aspects of Cognitive Functioning; Emotional Regulation; Executive Functioning/Impulse Control; Personality/Antisocial Characteristics; Attitudes toward Sex and Sex Offending; General Behavior; Actuarial and Clinically Guided Recidivism Risk Data; Moral Development; Sexual Interest; Social Skill; and demographic factors.

Chapter 5: Statistical Analysis and Results

Logistic regressions, by design, overcome many of the restrictive assumptions of linear regressions. For example, linearity, normality, and equal variances are not assumed, nor is the error term variance assumed to be normally distributed. There should be no multicollinearity among the independent variables and no outliers. A logistic regression of a binary response variable (Y) on a continuous, normally distributed variable (X) with a sample size of 73 observations achieves 80% power at a 0.05 significance level.

All information was collected and entered into SPSS for analysis. Descriptive statistics were run to assess the impact of an offender's verbal IQ, working memory, processing speed, and impulse control on a male juvenile sex offender's treatment completion and recidivism. To examine executive functioning in juvenile sex offenders and treatment completion, a logistic regression was conducted to investigate whether specific independent variables predicted the dependent variable, which had two categorical levels. The data were entered in a nonspecific order, using the SPSS "Enter" function, and did not use a step-wise data entry, as the variables were thought to be equally important.

Sample Demographics

A total of 73 juvenile sex offenders met all criteria and were retained for analysis in the present research study. Of these participants, 100% were male with ages ranging from 12 to 18 years, with an average age of 15.62 years (*SD* = 1.72; see Table 1). Of the 73 participants, 36 (52.9%) were European American, 28 (42.6%) were African American, and 3% identified as other. Household income reported by the sample ranged from $19,929 to $145,603, with a mean income of $62,216. The average overall IQ of the participants was 94.70 (*SD* = 13.55); 24 participants (33.8%) received special-education services.

Table 1
Sample Demographics

Variable	*N* (%) or*M (SD)*
Gender	
Male	73 (100%)
Female	0 (0%)
Age (years)	15.62 (1.72)
Ethnicity	
White/Caucasian	36 (52.9%)
African American	28 (42.6%)
Other	3 (3.9%)
Special education	24 (33.8%)

Bivariate Correlations

To examine the relationship between variables, bivariate correlations were computed for the four continuous independent variables (i.e., verbal IQ, working memory, processing speed, and impulse control) and the two binary dependent variables (i.e., any 5-year criminal recidivism [Y/N] and treatment completion [Y/N]. These data helped to determine if any of the independent variables were negatively correlated with the dependent variables and should be excluded as predictors as not to suppress the prediction model. In addition, the bivariate analyses served to examine the presence of multicollinearity. As depicted in Table 2, significant associations were identified between both outcome variables and independent variables. For the first outcome variable, treatment completion, the associations were as follows: Treatment Completion and Verbal IQ (R = .197, p = > 0.05), Treatment Completion and Impulse Control (R = .24, p = > 0.05), Verbal IQ and Working Memory (R = .56, p > 0.01), Verbal IQ and Processing Speed (R = .297, p > 0.01), Verbal IQ and Impulse Control (R = .280, p > 0.01), Working Memory and

Processing Speed (R = .462, p > 0.01), Working Memory and Impulse Control (R = .255, p > 0.05), and Processing Speed and Impulse Control (R = .385, p > 0.01). Significant associations were also found between the second outcome variable, recidivism and independent variables, which were as follows: Verbal IQ and Processing Speed (R = .297, p < .01), Verbal IQ and Impulse Control (R = .28, p < .01), Working Memory and Processing Speed (R = .46, p < .01), Working Memory and Impulse Control (R = .26, p > 0.05), and Processing Speed and Impulse Control (R = .385, p < .01). While there were statistically significant correlations between independent variables, the correlations were not strong enough to signal multicollinearity, and the logistic regression was run without eliminating any variables.

Table 2

Correlational Matrix of Demographic and Outcome Variables

Correlational Matrix of Demographic and Outcome Variable: Treatment Completion

Variable	Treatment completion	Verbal IQ	Working memory	Processing speed	Impulse control
Treatment completion	1.00				
Verbal IQ	.197*	1.00			
Working Memory	.02	.56**	1.00		
Processing Speed	.18	.297**	.462**	1.00	
Impulse Control	.24*	.280**	.255*	.385**	1.00

Note. **Correlation is significant at the 0.01 level (1-tailed)

*Correlation is significant at the 0.05 level (1-tailed)

Correlational Matrix of Demographic and Outcome Variable: 5-year Recidivism

Variable	5-year recidivism	Verbal IQ	Working memory	Processing speed	Impulse control
5-year recidivism	1.00				
Verbal IQ	.04	1.00			
Working Memory	.08	.04	1.00		
Processing Speed	-.08	.297**	.46**	1.00	
Impulse Control	.03	.28**	.26*	.385**	1.00

Note. ** Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

Primary Hypothesis. Hypothesis 1: Juvenile male sex offenders with higher executive functioning (i.e., verbal IQ, working memory, processing speed, impulse control) will be more likely to complete treatment.

A binomial logistic regression was performed to examine the effects of verbal IQ, working memory, processing speed, and impulse control on the likelihood that participants would complete treatment. The logistic regression model was not statistically significant, $\chi 2(4) = 7.54$, $p = .11$. Of the four-predictor variables, none was statistically significant. Therefore, executive functioning was determined not to predict treatment completion, and the first hypothesis was rejected. While the regression analyses indicated no significant association between the independent variables and treatment completion, results from the correlation analyses showed verbal IQ and impulse control to be positively correlated with treatment

completion. Therefore, higher verbal IQ and greater impulse control may be positively associated with successfully completing treatment.

Table 3

Logistic Regression Predicting Treatment Completion Based on Executive Functioning

	B	*SE*	Wald	*df*	*p*	Odds ratio	95% CI for odds ratio lower	95% CI for odds ratio higher
Verbal IQ	.04	.03	2.12	1	.15	1.04	.99	1.10
Processing Speed	-.04	.03	1.92	1	.17	.96	.91	1.07
Working Memory	.03	.03	1.08	1	.30	1.03	.97	1.09
Impulse Control	.07	.01	1.40	1	.24	1.02	.99	1.04

Secondary Hypothesis. Hypothesis 2: Juvenile male sex offenders with higher executive functioning (i.e., verbal IQ, working memory, processing speed, impulse control) will be less likely to recidivate.

A binomial logistic regression was performed to examine the effects of verbal I.Q., working memory, processing speed, and impulse control on the likelihood that participants would recidivate during the 5-year period following treatment. The logistic regression model was not statistically significant, $\chi 2(3) = 1.91$, $p = .75$. Of the four predictor variables, none was

statistically significant. Therefore, executive functioning was determined not to predict criminal recidivism, and the second hypothesis was rejected.

Table 4

Logistic Regression Predicting Recidivism Based on Executive Functioning

	B	SE	Wald	df	p	Odds ratio	95% CI for Odds Ratio Lower	95% CI for Odds Ratio Higher
Verbal IQ	-.00	.03	.03	1	.96	.99	.93	1.07
Processing Speed	.04	.04	.96	1	.33	1.04	.97	1.11
Working Memory	-.04	.04	1.34	1	.25	.96	.89	1.03
Impulse Control	.01	.01	.17	1	.68	1.01	.97	1.05

Chapter 6: Discussion

Limitations of the Current Study

The current study examined juvenile sex offenders from various counties and backgrounds; however, all the juvenile sex offenders in the study had been court ordered to receive treatment at a suburban residential treatment facility, considered a limitation, as the majority of the offenders retained in the study were primarily residing in the state of Pennsylvania before they were ordered for treatment. While the juvenile sex offenders were culturally diverse, they all received services at the same treatment facility, possibly impacting study results. Using data from one residential treatment facility limits the findings of the study to the treatment modalities used and limits the generalization of results to other treatment facilities for juvenile sex offenders. Given the population, obtaining access to participant data and acquiring a large sample size can be difficult, another limitation in the present study given its 73 participants. Additionally, all participants were between 12 to 18 years old and did not include offenders younger than 12 years old or younger male adults who committed their offense at 18 years of age and were court ordered for treatment.

Owing to practicum students being the primary administrators of the assessments, errors could be found in the administration process, scoring, and/or interpretation of the scores, thereby possibly impacting results. Practicum students also had different levels of training in assessments and varied supervision, possibly influencing the reliability of the assessments and the scores used in the data set. The present study used the WISC-IV/V or WAIS-IV and IVA to measure executive functioning, a possible limitation as executive functioning can be measured through multiple factors. Executive functioning encompasses multiple variables, including working memory, processing speed, verbal IQ/cognitive abilities, decision making, impulse control,

considering alternative actions, processing consequences, prioritizing, task initiation, and organization skills; the present study examined only a few aspects of executive functioning. In addition, the present study did not examine moderators, such as impact of mental health, family make-up and dynamics, support, and abuse history, regarded as a limitation, as they may explain or suppress executive functioning.

Additionally, the present study did not compare juvenile sex offenders from the suburban residential treatment facility to offenders who were court ordered to outpatient services, possibly of interest when comparing executive functioning of juvenile sex offenders, as well as treatment modalities used for mandated treatment: residential versus outpatient. Examining arrests only as a form of recidivism, rather than arrests and convictions, can also be seen as a limitation. The present study chose to examine arrests rather than convictions because convictions can be pleaded down; however, having additional information about the conviction would be beneficial, particularly when looking at sexual and nonsexual recidivism and multiple arrests/convictions.

Implications of Findings

The results were not significant; however, information can still be beneficial for mental-health professionals and treatment providers. A correlation was found between verbal IQ and impulse control and treatment completion, suggesting juvenile sex offenders with higher verbal IQ and greater impulse control may be more likely to successfully complete treatment than same aged peers who have lower levels of impulse control and verbal IQs. Therefore, mental-health professionals and treatment providers may want to examine such factors prior to treatment entry to ensure an offender's needs can be met and treatment can be tailored to such needs. For example, placing the juvenile sex offender on a behavioral treatment plan upon entering the facility to improve impulse control or scheduling additional time with staff/teachers to work on

tasks based on verbal IQ may be beneficial. Some facilities may not have the resources to allot additional time for behavioral plans/tutoring, but with proper planning, the juvenile sex offenders may be able to go to another facility within a short distance where they can be supported in both their sex offender treatment and behaviors/education to allow for the best chance of success.

While executive functioning was not found to be a significant determinant of treatment completion or of 5-year recidivism, the correlation between verbal IQ and impulse control on treatment completion may provide some preliminary information for court officials, probation officers, and attorneys about juvenile male sex offenders. This information may lead to future research designed to better assess which treatment modality, treatment resources, or facility might be most beneficial for specific offenders.

Relevance of the Study to Theory and Practice

Current theories and prior research have assisted in structuring treatment of juvenile sex offenders and treatment modalities that are currently used. While the results were insignificant in the present study, information can further inform mental-health professionals and treatment providers in structuring modalities in treating juvenile sex offenders. Specifically, mental-health professionals and treatment providers may want to focus on fostering a juvenile sex offender's verbal IQ and impulse control. Two theories that should be examined further in the treatment of juvenile sex offenders are cognitive learning theory and problem solving theory, both of which strongly impact an offender's ability to learn and apply information.

Cognitive learning theory is described as the way a person processes and reasons information. It revolves around many factors, including problem-solving skills, memory retention, thinking skills, and the perception of learned material (Craig & Hutchinson, 2007). Multiple aspects of cognitive learning theory are applicable to treatment programs for juvenile

sex offenders, as executive functioning and the ability to learn are closely associated. Individuals with higher levels of executive functioning have the core skills needed to learn more readily and apply information. For example, an individual with higher levels of executive functioning is also observed to have adequate problem-solving skills, working memory/memory retention, and thinking skills, and is able to apply information to real-world scenarios (Craig & Hutchinson, 2007). Higher levels of executive functioning allow the individual to learn new information; process, retain, and apply the information to the current environment; and generalize the information to other settings (Craig & Hutchinson, 2007). Individuals with higher executive functioning can grasp and apply information more effectively; therefore, they may have a greater chance of completing treatment given they learn and retain/apply information better than individuals who have learning disabilities or cognitive deficits (Craig & Hutchinson, 2007).

As problem solving and verbal IQ are also closely related, juvenile sex offenders who have such skills may be able to understand treatment models, speak about their own experiences more effectively, and apply the information learned to other settings (Craig & Hutchinson, 2007). Those within treatment programs for juvenile sex offenders are also learning within the context of their environment, a situation that can be helpful to foster their skills; however, offenders may have difficulty generalizing information learned to outside settings without proper supervision and support.

Problem solving theory is defined as a non-routine activity undertaken to change an undesirable state of affairs; the focus is on improving problem solving skills to coping with difficult situations in hopes of relieving feelings of stress (Funke, 2010). If an offender has inadequate problem-solving skills, a core aspect of executive functioning, treatment may be impacted. As previously stated, learning, retaining, and applying information is easier for

individuals with higher levels of executive functioning; therefore, such individuals are able to problem solve more effectively than individuals with lower levels of executive functioning (Craig & Hutchinson, 2007).

Problem solving theory further impacts juvenile sex offenders in relation to treatment completion and recidivism. To successfully complete treatment, an offender uses skills learned in a structured, supervised setting. Individuals who can follow the rules, complete their sex-offender-specific assignments, and problem solve through issues presented are able to successfully complete treatment (Funke, 2010). However, different problem-solving skills are used after treatment completion and can impact recidivism, as recidivism is a long-term measure and based on the ability to transfer and apply skills to the present environment. For some individuals, problem-solving skills are difficult to learn and apply to other settings, especially if they are learning and practicing such skills in a controlled, supervised environment (Funke, 2010). For example, an offender may be able to problem solve while attending inpatient treatment but have difficulties upon release. Because learning problem-solving skills within an inpatient setting and transferring such skills is difficult, particularly for individuals with learning difficulties or lower executive-functioning levels, step-down programs become vital (Funke, 2010). Through step-down programs, the offender is able to "step down" to a lower level of care while practicing problem-solving skills and having supervision and support to continue to learn how to apply the recently learned skills (Funke, 2010). These theories can be of assistance in developing treatment modalities and in improving understanding of juvenile-sex-offender treatment and of the impact of the ways treatment facilities structure treatment.

Findings Related to Future Work in Forensic Psychology

The findings from the present study suggest juvenile sex offenders in residential treatment do not have lower levels of executive functioning when compared to same aged peers who are not in the juvenile justice system. While executive functioning as a whole did not predict treatment completion or recidivism, results suggest juvenile sex offenders with higher verbal IQ and increased impulse control may be correlated with treatment completion. This information can be applied to treatment modalities in residential treatment programs and to structure treatment to offenders with lower verbal IQ and lower levels of impulse control. Treatment modalities could be adapted in order to foster a juvenile sex offender's verbal intelligence through pairing verbal discussion with physical handouts/pictures and having the individual repeat/summarize the information discussed. By doing so, the juvenile sex offender is more likely to understand, retain, and be able to apply the information learned in treatment to other aspects of their lives.

Additionally, treatment modalities could be structured to teach juvenile sex offenders to gain greater control over their impulses, possibly improving treatment outcomes. Treatment could be implemented through multiple modalities, including behavioral plans, problem-solving classes/sessions, anger management and emotional-regulation sessions, and repeating directions/information. As an adolescent's brain, specifically the frontal lobe, is still developing, thereby impacting decision making and impulse control, providing additional tools to problem solve effectively and manage one's emotions before acting out is vital. In order to build upon an offender's verbal abilities, offenders must repeat directions/rules to the treatment provider to ensure they understand expectations; short, direct directions/rules tend to be more effective than long verbiage. Fostering an offender's brain development and executive-functioning skills is

important during treatment to ensure specific aspects of sex offender treatment are understood, retained, and applicable.

Implications for Diversity and Advocacy

The present study did not examine female juvenile sex offenders or any variables within treatment for female juvenile sex offenders. Because the population of female juvenile sex offenders is less prevalent than that of male juvenile sex offenders within treatment facilities, treatment for female juvenile sex offenders and the treatment modalities implemented for them are not clearly understood . Identified female juvenile sex offenders may be a smaller group to begin with but this group should be a focus, as it relates to treatment and the impact of executive functioning on treatment outcomes and recidivism. Additionally, examining juvenile sex offenders in other parts of the United States or other countries may be beneficial to better understand the impact of executive functioning and the ways other states/countries are implementing treatment for juvenile sex offenders. Given the limited population sample in the present study, a more diverse sample in relation to different cultures, religions, or family structure/dynamics would allow the findings to be more generalizable to other regions, rather than limited to the state of Pennsylvania.

Future findings could impact the client advocacy of court officials, probation officers, and attorneys, as well as of mental-health professionals and treatment providers.. With a deeper understanding, professionals could better advocate for the best treatment modalities, resources, and programs that would- be most effective for the juvenile sex offender. This information could also help judges and other criminal-justice stakeholders to adopt more evidence-based sentencing.

Future Directions

Future researchers may want to conduct studies in other residential treatment programs for male juvenile sex offenders to determine if similarities and/or differences exist in the treatment modalities and findings. The various locations, morals, and overarching goals of different treatment programs would be interesting to examine in future studies. Research should expand not only to other residential treatment programs for male juvenile sex offenders, but also to treatment programs for female juvenile sex offenders and to outpatient treatment programs for both male and female juvenile sex offenders. Additional research would allow for comparison among residential treatment programs for male juveniles, as well as for obtaining additional information regarding the female sex offender population and juvenile sex offenders receiving treatment in outpatient modalities. Examining both female sex offenders and outpatient treatment modalities may provide more in-depth information about successful treatment modalities and provide further insight into the female sex offender population. Having a better understanding of treatment modalities in other treatment programs, in combination with greater insight into the impact of executive functioning on juvenile sex offenders, ensures offenders receive treatment for their sexual offenses that is structured to their cognitive and emotional level. Structuring treatment to the individual is important, given the frontal lobes of juveniles are still developing, thus significantly impacting the abilities of juveniles to learn/apply information, manage their impulses, and to make decisions.

Future studies could expand the measures used to examine executive functioning and use a more comprehensive battery of assessments. While executive functioning can be assessed in multiple ways, having a set battery with different measures may be beneficial to gain a deeper understanding of executive functioning in juvenile sex offenders. Using more advanced-level

clinicians to administer the assessments or having increased supervision over practicum students conducting the assessments could also be a focus of future studies to allow for greater reliability in assessment results.

Future research may also want to explore similarities and differences among treatment programs for juvenile sex offenders in order to improve treatment outcomes and lower recidivism rates. Future studies may want to examine not only arrests but also convictions. While convictions may be pleaded down, the conviction provides greater detail into the offender's behavior and may be helpful to further inform treatment modalities and examine trends within the recidivism data. Arrests can misinform recidivism results, as individuals may be arrested as a result of stigma of their past crimes, may be arrested and released/found innocent, may be arrested because of their race or ethnicity, and/or may be arrested as the result of mistaken identity. Arrest information is something that should be examined in future studies, as the information regarding arrests may not give a true account of an individual's behavior and may suppress or further explain recidivism results. Future research may also want to examine the type of sexually based crime individuals have committed, as well as whether their offenses influenced their treatment and/or recidivism.

Future research could work toward developing and implementing other treatment modalities informed by research to assist in further developing or fostering an offender's executive-functioning skills (i.e., verbal IQ, impulse control, or problem-solving skills). Additional treatment modalities could be created and implemented within programs for juvenile sex offenders to ensure the individual develops cognitively, but is also able to apply the information learned in the sex offender treatment. Additional assessment implementation could include a testing protocol to measure the effectiveness of such treatment modalities and an

individual's executive-functioning abilities as a whole and their impact on treatment.

Lastly, future studies may want to examine moderators in addition to executive functioning, as moderators may suppress or explain results. For example, examining family dynamics may be helpful given level of support, home life, communication styles, and discipline levels in the home can all impact an individual's ability to problem solve and communicate effectively. Other moderators that may be beneficial to examine are mental-health history, personality characteristics, anger management, family therapy involvement, socioeconomic status, and history of trauma and/or abuse.

Summary and Conclusion

A critical challenge in improving treatment for juvenile sex offenders is identifying additional risk factors and developing treatment that is specifically tailored to the individual. The present study sought to further explore executive functioning among juvenile sex offenders and examined the relationship between verbal IQ, working memory, processing speed, and impulse control among male juvenile sex offenders and the impact it had on treatment completion and recidivism. The study used a nonexperimental, archival research design in which logistic regression analyses were conducted to determine if one or more of the independent variables impacted or predicted the two dependent variables. Results indicated no significant association between the independent variables and treatment completion; results from the correlation analyses showed verbal IQ and impulse control to be positively correlated with treatment completion. Therefore, higher verbal IQ and greater impulse control may be positively associated with successfully completing treatment. Juvenile sex offenders are often treated using a one-size-fits-all approach, which may be counterproductive for juveniles with lower executive functioning, specifically verbal IQ and impulse control. Mental-health professionals and

treatment providers should examine such factors prior to treatment entry to ensure offenders' needs can be met and treatment can be tailored to their cognitive and executive-functioning needs.

The secondary hypothesis was rejected, as results were not significant; executive functioning was determined not to predict criminal recidivism. Results may have been insignificant since recidivism is measured on a long-term basis and is strongly impacted by personality factors, environment, and support, whereas the ability to complete treatment successfully is more closely related to problem-solving skills and controlling impulses in a structured environment with constant supervision. While the results overall were insignificant, the present research provides a foundational basis for future research studies on juvenile sex offenders and can further inform residential treatment programs on possible risk factors for reoffending.

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