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Youthful Offenders Sentencing Trends in Pennsylvania

Thesis
Presented to
The Graduate School
Of Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master of Social Sciences

by
Monika Nwajei
August 2023

Accepted by:
Dr. Rhys Hester, Committee Chair
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Dr. Bryan L. Miller

ABSTRACT

The overwhelming majority of existing literature on the effects of age on judicial sentence decision-making focuses on juveniles (ages 18 and below) and older adults. This paper focuses on offenders between the ages of 18-29, who fall legally outside the definition of juvenile, yet do not have the full brain development or clinical maturity of an adult to provide knowledge of sentencing outcomes for different populations and a well-rounded review and critique of judicial sentence decision-making (Johnson, Blum, & Giedd, 2009). Using a series of logistic regression analyses on the Pennsylvania Commission Sentencing (PCS) data from 2001 to 2018, I examine the effects of legal and extralegal factors, specifically age, on the in/out prison sentence decision and sentencing trend of youthful offenders. The paper discusses the influence of existing brain development research on the Supreme Court's ruling in *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama* and examines judicial sentence decision-making through Focal Concerns Theory to synthesize how a brain science spillover effect has impacted youthful offender sentencing. The results demonstrate that all offenders are sentenced leniently after the Miller ruling; therefore, a brain science spillover effect is not the cause or reasoning for sentencing leniency. Furthermore, the results affirm sentencing literature findings about specific factors that increase an offender's likelihood of imprisonment.

Keywords: Youthful Offenders, Roper v. Simmons, Graham v. Florida, and Miller v. Alabama, age effect, sentencing leniency

DEDICATION

This manuscript is dedicated to all offenders convicted harshly simply because of the color of their skin, age, or gender.

ACKNOWLEDGEMENTS

Completing this thesis was only done with the support of my chair, Dr. Rhys Hester, and committee members, Dr. Heather Hensman Kettrey and Dr. Bryan L. Miller. Thank you for your patience, encouragement, and constant willingness to teach me. You all have pushed me beyond my limits and taught me that I can work with large datasets and conduct research despite its significant difficulties. To my classmates, thank you for your support and for sharing the burden of the thesis woes. In the end, we did it!

I want to thank my family for their endless support throughout the past two years. Mom, thank you for always answering my call, sending late-night pick-me-up texts, and sending care packages right when I needed them. Allyson, thank you so much for always challenging me to do better and be my best self. Chase, thank you for your endless love, support, and encouragement over the past few years; I wouldn't be where I am today without you. To the Aunties that have become second mothers, thank you for picking me up when I feel down and reminding me of who I am.

To my best friend, Allie, you have been my rock throughout the years, and you continued once I started on this thesis journey.

Alyssa, Hannah, and David, thank you for listening to the endless discussions about my thesis and sharing my enthusiasm and passion for this topic. Your encouragement and constant support have forever changed me.

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Table

Table 1: Descriptive Statistics

Dependent Variable	Freq.	Percent
Prison	162,878	14.00
Independent Variables	Freq.	Percent
<i>Age Category</i>		
Less than 21	106,171	9.12
21-25 (reference category)	286,775	24.64
26-29	176,681	15.18
30-39	304,003	26.12
40-49	188,785	16.22
50+	99,922	8.59
<i>Young Adult</i>		
29 and younger	592,710	50.93
30 and older	569,627	48.95
<i>Gender</i>		
Male	912,316	78.39
Female (reference category)	251,434	21.61
<i>Race</i>		
Non- Hispanic White	690,719	59.35
African American	352,318	30.27
Hispanic	82,987	7.13
Other	37,726	3.24
<i>Trial</i>		
Plea	1,126,709	96.82
Trial	37,041	3.18
<i>Offense Type</i>		
Homicide	8,495	0.73
Other Violent	228,307	19.62
Property	292,671	25.15
Drugs	339,361	29.16
Other	294,916	25.34
<i>Mandatory minimum</i>		
Not Required	1,144,610	98.36
Required	19,140	1.64
<i>Presumptive Sentence</i>		
No	972,308	83.55
Yes	187,154	16.08

<i>Post-Miller</i>				
PRE	755,354	64.91		
POST	408,396	35.09		
Independent Variables				
	Mean	Std. Dev	MIN	MAX
<i>Sentence Age</i>	32	14.81		
<i>Criminal History (PRS)</i>	1.59	1.95	0	7
<i>Offense Severity (OGS)</i>	3.84	2.52	1	15

Note: *N*=1,163,750

Models

Model 1 - Logistic Regression Prison Model

	AME	OR	SE	p
Case Characteristics				
Offense Severity	0.04	1.98	0.01	0.000
Criminal History	0.03	1.72	0.00	0.000
Trial	0.07	3.02	0.06	0.000
Mandatory minimum	0.19	24.37	0.82	0.000
Presumptive Sentence	0.02	1.36	0.02	0.000
Post-Miller	-0.01	0.79	0.01	0.000
<i>Offense Type</i>				
Homicide	0.04	1.75	0.11	0.000
Other Violent	-0.01	0.85	0.01	0.000
Property (reference)				
Drugs	0.00	0.94	0.01	0.000
Other	0.00	0.95	0.01	0.000
Offender Characteristics				
Male	0.03	1.71	0.02	0.000
Female (reference)				
Young Adult	-0.01	0.86	0.01	0.000
<i>Offender Race</i>				
Non- Hispanic White (reference)				
African American	0.01	1.24	0.01	0.000
Hispanic	0.02	1.36	0.02	0.000
Other	0.00	1.00	0.02	0.941

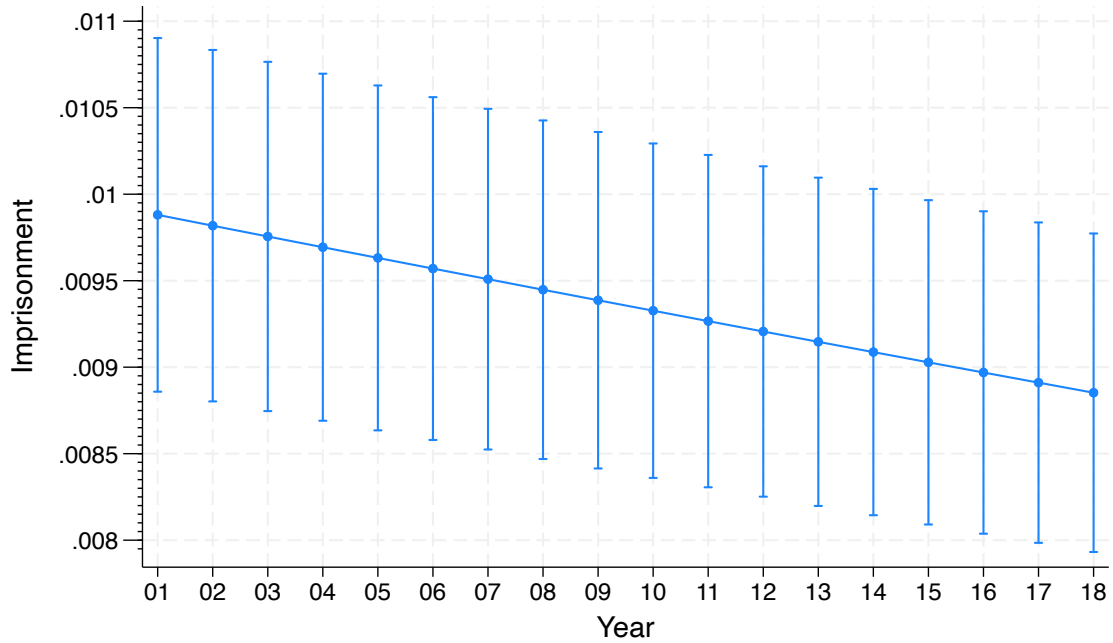
Note: $N = 1,158,036$; *AME* = Average Marginal Effects interpret the margins between of each independent variable and in/out prison sentence decision; *OR* = Odds Ratio, *SE* = Standard Error, *p* = p-value; County fixed effects are included in the model but omitted from the table.

Model 2- Predictive Probabilities of Imprisonment Pre and Post Miller

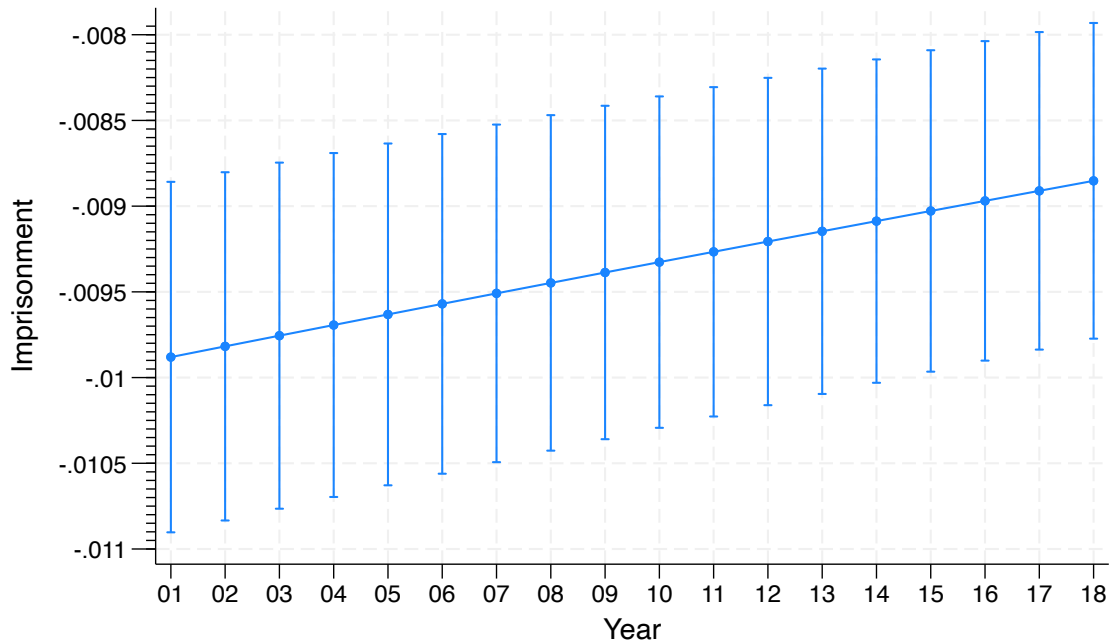
	AME	SE	<i>p</i>	AME Differences
Older Adult, Pre-Miller	0.1388	0.0004	0.000	0.0130
Older Adult, Post-Miller	0.1258	0.0004	0.000	
Young Adult, Pre-Miller	0.1484	0.0004	0.000	0.0138
Young Adult, Post-Miller	0.1346	0.0005	0.000	

Note: N= 1,158,036; *AME* = Average Marginal Effects interpret the margins between of each independent variable and in/out prison sentence decision, *SE* = Standard Error, *p* = p-value; Results are derived from a logistic regression model that includes a Young Adult * Post-Miller interaction term. All other controls from Model 1 were included but are omitted from Model 2.

Model 3- Likelihood of Imprisonment for Young Adults Over Time in Pennsylvania



Model 4- Likelihood of Imprisonment for Older Adults Over Time in Pennsylvania



Figures

Figure 1- Variable Description		
Variable	Coding	Description of variables
County	List of county	PCS variable identifying the county the offender was sentenced in
Dataset year	2001-2018	Variable identifying the year of the dataset
Mandatory Minimum	0= Not required 1= Required	PCS variable measuring the mandatory minimum sentence recommendation
Most serious offense	0=Yes	PCS variable measuring the most serious offense in a judicial proceeding
Offender gender	0= Female 1= Male	PCS variable identifying the gender of the offender
Offender race	0= Non- Hispanic White 1= African American 2= Hispanic 3= Other	PCS variable identifying the offender's race/ ethnicity
Offender sentence age	1= Less than 21 2= 21 to 25 3= 26 to 29 4= 30 to 39 5= 40 to 49 6= 50 and older	Variable grouping offender sentencing age
Offense severity	1 to 15	(<i>Offense Gravity Score- OGS</i>) PCS variable reflecting the severity of current offense
Offense type	1= Homicide 2= Other Violent 3= Property 5= Drugs 6= Other	Variable categorizing the offense using PCS label variable
Post-Miller	0= Pre-Miller 1= Post-Miller	Variable identifying cases convictions before and after Miller v. Alabama (2012)
Presumptive sentence	0=No	PCS variable identifying the sentencing guideline
Criminal history	0= No prior record 1= PRS 1 2= PRS 2 3= PRS 3 4= PRS 4 5= PRS 5 6= Repeat Felony Offender	(<i>Prior Record Score- PRS</i>) PCS variable measuring the offender's prior criminal history using number and severity of prior offense

	7= Repeat Violent Offender . = Missing	
Prison	0= No Imprisonment 1= Imprisonment	PCS variable identifying the most serious sanction for offense
Trial	0= No Trial 1= Trial	PCS variable identifying the disposition of each offense
Young Adult	0= 30 and older 1= 29 and younger	Variable grouping offender sentencing age

Figure 2- Number of cases per year

Year	Number of Observations
2001	50,496
2002	56,798
2003	58,586
2004	57,270
2005	61,046
2006	63,223
2007	66,424
2008	70,925
2009	70,337
2010	67,884
2011	65,172
2012	67,193
2013	71,725
2014	71,460
2015	66,788
2016	68,182
2017	65,677
2018	64,564
Total	1,163,750

CHAPTER 1- INTRODUCTION

The prioritization of juveniles within sentencing literature is partly due to the specialized sentencing criterion for juveniles made by the Supreme Court, as well as the separation of judicial court, juvenile justice court and adult criminal court. Because of this the overwhelming majority of existing literature on the effects of age on judicial sentence decision-making focuses on juveniles (ages 18 and below) and older adults. Recently researchers found that the relationship between age and sentencing is curvilinear. However, this curvilinear relationship oversimplifies the impact of age using the age crime curve theory; in fact, research demonstrate that offenders under 18 and above 50 receive more lenient treatment than offenders between the ages of 20-49 because risk-taking behavior arises and descends throughout a lifetime (Steffensmeier, Ulmer & Kramer, 1998; Stolzenberg & D'Alessio, 2008). An early study by Steffensmier et al. (1998) found that age negatively impacts sentencing for young African American men as results indicate young African American men receive the harshest punishments; however, further research has extended this finding to young minority males (Holleran & Spohn, 2004).

This paper focuses on offenders between the ages of 18-29, who fall legally outside the definition of juvenile, yet do not have the full brain development or clinical maturity of an adult (Johnson, Blum, & Giedd, 2009). I identify this age group as “youthful” offenders. The existent literature provides a wealth of information on the sentencing disparities between juveniles and adult offenders; however, youthful offenders, between the ages of 18 and 29 are not appropriately addressed. Further

exploration of sentencing for offenders who lie just outside of the classification of juveniles would provide knowledge of sentencing outcomes for different populations, thus allowing for a well-rounded review and critique of judicial sentence decision-making.

It could be argued that youthful offenders potentially endure severe sentencing treatment because of how the law is structured as juveniles receive lenient sentencing because of the association between the age and blameworthiness. The criminal justice system only distinguishes offenders as a juvenile or an adult to align with the legal cutoff age of 18. It is seemingly supported by sentencing literature as it is well-saturated with research that focus on juveniles and adults (Benekos & Merlo, 2008; Cohen, Bonnie, Taylor-Thompson, & Casey, 2016). Nevertheless, the potential treatment is highly concerning as several notable Supreme Court cases, *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama*, and scientific research illustrate resistance with applying severe sanctions to juvenile offenders. Psychologists have described the period at the end of adolescence (ages 18 to 29) as emerging adulthood in which cognitive functioning develops to form personality, judgment, and identity (Arnett, 1996; McLeod, 2013). Considering the Supreme Court's acceptance of the scientific research, and this definition, it is argued that youthful offenders more closely resemble juveniles than adults and require juvenile-like or more lenient sentencing treatment.

This study aims to advance research on the effects of legal and extralegal factors, specifically age, on the in/out prison sentence decision (the decision to incarcerate) and sentencing trend of youthful offenders. In the sections that follow, I will discuss the

influence of existing brain development research on the Supreme Court's ruling in *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama* and examine judicial sentence decision-making through Focal Concerns Theory to synthesize how a brain science spillover effect has impacted youthful offender sentencing.

CHAPTER 2- LITERATURE REVIEW

Overview of Supreme Court Caselaw Development

This section will provide a brief case analysis of *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama* to examine how the rationale for prohibiting severe sentencing for juveniles affects youthful offenders. *Roper v. Simmons* prohibited capital punishment on a defendant who committed a crime under 18 based on the differentiation between juveniles and adults. In *Graham v. Florida*, the Supreme Court banned life without parole (LWOP) as a possible sentence for juvenile offenders convicted of non-homicidal offenses. Lastly, the Supreme Court extended Graham's ruling by prohibiting LWOP sentences for all juvenile offenders in *Miller v. Alabama* based on the necessity for specialized case assessment for juveniles. In all three cases, the Supreme Court identify the differences in development between juveniles and adults to provide evidence of how juveniles sentencing process and sanctions should be different.

Roper v. Simmons

The Supreme Court ruling of *Roper v. Simmons* in 2005 laid the foundation that the death penalty was unconstitutional for juveniles. This case was brought to the Supreme Court when, at seventeen, Christopher Simmons and two accomplices planned and committed burglary, abduction, and capital murder (Bora, 2005). Per the grand jury's recommendation and aggravating factors presented by the State, Simmons was sentenced to receive the death penalty in 1993. After several petition appeals and denials, it was not until 2002 that Simmons's conviction was reassessed as a result of the Supreme Court's first time of prohibiting the death penalty for any individual particularly for the

intellectually disabled (*Atkins v. Virginia*), which ruled that the intellectually disabled were not culpable for severe crimes due to their inability to rationalize with the same brain functioning as a non-disabled adult (Benekos & Merlo, 2008).

In 2005, the Supreme Court used three rationales to understand the difference in culpability between juveniles and adults. First, the Supreme Court found that juveniles do not possess the same level of responsibility and maturity as adults (Krause, 2015). Comparatively, juveniles are more immature, reckless, and irresponsible than adults, which the Supreme Court justified by illustrating that more offenders tried for reckless behavior were juveniles (Gullone & Moore, 2000). Second, the Supreme Court found that because juveniles are more susceptible to outside influence when compared to fully developed adults, the expectation that juveniles can discern between negative and positive influences is impossible. Additionally, the lack of control of their environment increases their vulnerability to negative consequences and peer pressure, which may further endorse criminal behavior (Monahan, Steinberg, & Piquero, 2015).

Lastly, the Supreme Court found that because the character and personalities of juveniles develop at a slower rate than adults, juveniles are not well-informed enough to make sound decisions (Emens, 2005). In support of this one notable theory, Erik Erickson's stages of psychosocial development, explains that juvenile's inability to make good decisions is because an individual's personality develops through the completion of eight stages from infancy to adulthood, furthermore the success of a stage can either positively or negatively influence an individual's personality (McLeod, 2013). Finally, the Supreme Court evaluated the national consensus on using the death penalty and found

that the majority of Americans were against severe punishments for juveniles. The Supreme Court found it necessary to thus identify distinct and appropriate punishments for children and adults, despite the law's recommended sentence (Dowling, 2015). Therefore, in 2005, the U.S. Supreme Court prohibited the death penalty for offenders who commit a crime under the age of 18.

Graham v. Florida

Five years following the ruling of *Roper v. Simmons* in 2005, the Supreme Court banned life without parole (LWOP) as a sentence for juvenile offenders convicted of non-homicidal offenses through the case of *Graham v. Florida* (Cohen et al., 2016). The case involved sixteen-year-old Terrence Graham, who was found guilty of armed burglary with assault and attempted armed robbery and was sentenced to LWOP (Sussman, 2012). The prosecution's decision to charge Graham as an adult was influenced by his prior criminal history. After Graham's appeal was denied, the U.S. Supreme Court reviewed the case based on the criterion of *Roper v. Simmons* and the evolving pushback against severe punishment for juvenile offenders.

The case of *Graham v. Florida* adopted and expanded on the findings from *Roper v. Simmons* to justify the elimination of LWOP for juveniles. Compared to adults, the Supreme Court found that juveniles' lack of maturity, responsibility, heightened susceptibility to outside influence, and fickle character diminished their capacity to understand long-term consequences (Maroney, 2009). Additionally, the Supreme Court argued that juvenile crimes do not reflect the juvenile's bad character. Instead, the crimes illustrated that school systems, family support, and additional supportive services had

failed to cultivate and develop the juvenile as a well-behaved citizen (Krause, 2015). The Supreme Court concluded that most states were against LWOP sentences for juveniles by pointing to the rare use of the sentencing. Further, the Supreme Court noted that of the States using the LWOP for juveniles, one jurisdiction held over half of the juvenile LWOP offenders (Arya, 2010).

The Supreme Court also examined the categorical rules and how these rules affect the sentencing of juveniles. Like *Roper v. Simmons*, the Supreme Court recognized that exceptions should be made, despite the crime committed and the mandatory sentence attached. In the case of *Graham v. Florida*, the Supreme Court found that LWOP was excessively harsh, as a juvenile would likely serve a longer sentence for the same crime as an adult because of the age difference. Furthermore, the Supreme Court stated LWOP for juveniles is disproportional in nature, as juveniles have limited culpability based on the *Roper v. Simmons* rationale, and thus, considering juveniles as the worst criminals is irrational. The Supreme Court agreed that while the State is not required to guarantee freedom, defendants must have a meaningful opportunity to be released. Thus, in 2010, the Supreme Court prohibited LWOP for all juvenile convicted of non-homicide offenses.

Miller v. Alabama

Nearly two years later, the Supreme Court was faced with applying the ruling of *Graham v. Florida* to homicidal offenders. The case involved fourteen-year-old Evan Miller, who was found guilty and sentenced to LWOP for capital murder by arson and aggravated robbery (Boone, 2014; Scott, 2013). The State felt it was necessary to give Miller LWOP due to the gross nature of the crime and the defendant's commentary

during the murder: “I am God, I’ve come to take your life” (Steiker & Steiker, 2013). In 2012, the Supreme Court reexamined Miller’s case based on *Roper v.*

Simmons and *Graham v. Florida*’s positions on juvenile sentencing practices, as well as an individualized case assessment.

The ruling of *Miller v. Alabama* accepted *Roper v. Simmons* and *Graham v. Florida*’s grounds that children are “constitutionally different from adults for the purposes of sentencing,” given the developmental difference between an adult and a juvenile (Sussman, 2012). The Supreme Court further challenged the judicial sentence decision-making process to consider juvenile characteristics and case specifics before imposing a penalty, thus eliminating mandated sanctions (Scott, 2013). According to this protocol, judges’ sentencing decisions would be better justified with information on juveniles’ demographics, social history, family involvement, and criminal history (Krause, 2015). This protocol led to the 2012 Supreme Court Ruling that prohibited LWOP sentences for all juvenile offenders, including non-capital and capital offenses.

Post Roper, Graham, and Miller

The rulings in *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama* affirmed the Supreme Court’s position that “death is different” for juveniles, and therefore, careful and methodical handling of juvenile death penalty and LWOP cases is a necessary requirement of the criminal justice system.

While each individual case contained different elements, the Supreme Court rulings unanimously prioritized youthfulness as the factor that diminished juveniles’ criminal responsibility. This prioritization of youthfulness has been identified by scholars

as the “Youth Discount” Theory. The Youth Discount Theory describes the substantive reduction in punishment severity, including sentence type and length, based on age in proximity to culpability (Feld, 2013a; Sloan, 2015). Youth Discount Theory embodies a “second chance” ideology by implementing rehabilitative practices for juveniles with the intent that that juveniles will be diverted from future criminal activity and will be able to re-enter society. Prominent organizations such as the American Bar Association and American Law Institute’s Model Penal Code support the Youth Discount Theory by practicing early parole releases and integrative sentencing on juvenile offenders that prioritize rehabilitation (Feld, 2013b). After the Supreme Court ruling of *Miller v. Alabama*, 15 states reconstructed their sentencing formulas, with four states abolishing juvenile LWOP (Greenlee, 2015). To further provide support for the abolishment of the death penalty and LWOP, the Supreme Court utilized existing neuroscience research to demonstrate developmental differences between juveniles and adults.

Developmental Neuroscience

The U.S. Supreme Court has progressively considered neuroscience a guiding asset for abandoning and reshaping laws. For example, in the case of *Atkins v. Virginia*, the Supreme Court used neuroscience to prohibit the execution of intellectually disabled offenders, this identified how intellectual deficits (e.g. low intelligence quotient) can cause harmful consequences (e.g. commit crime, act out of normal manner) (Scott, 2013). Despite the increased use of neuroscience and brain development to guide sentencing outcomes, criminal law still relies heavily on defendants’ moral responsibility, which has had mixed implications as it assumes that an offender can discern right and wrong

(Greene & Cohen, 2004; Morse, 2006). On one side, judges, policymakers, lawyers, and researchers actively support the pursuit of reforming sentencing decision-making by integrating extralegal factors and interdisciplinary research (e.g., psychological development research, etc.). On the other hand, neuroscience research is potentially rejected or ignored, causing a disconnect between research that could positively inform sentencing decisions and the criminal justice sentencing decision-making practice (Morse, 2006). This section reviews the existing literature on neuroscience and brain development to highlight its influence on the sentencing decisions of *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama*.

Brain Development

Neuroscience research has demonstrated that the brain is reshaped and refined over a lifetime through new experiences and information (Goyrlay et al., 2022; Koini, 2018; Luna et al., 2001; Miller & Cohen, 2001). Scholars have noted that a well-developed brain increases neuro-connectivity, producing higher cognitive executive functions (Casey, Galvan, & Hare, 2005; Johnson, Blum, & Giedd, 2009; Beckman, 2004; Koini, 2018). Individuals with lower levels of cognitive executive functioning can have difficulty with self-regulation, impulsivity, and risk-taking, which have been theorized to be related to individuals engaging in criminal behavior (Adjorlolo & Egbenya, 2016; Anderson et al., 2001; Gibson & Krohn, 2012; Ordaz, Foran, Velanova, & Luna, 2013; Prior et al., 2011).

Research has demonstrated a linear relationship between cognitive executive functioning and age (Galván, 2014; Ordaz, Foran, Velanova, & Luna, 2013). In a study

conducted by Patrick, Blair, and Maggs (2008), examined the emotional decision-making and risky behavior of female college students aged 19 to 28. Results found that participants with low emotional decision-making engaged in more risky behaviors than those with high emotional decision-making. Moreover, risk behavior decreased as age progressed (Patrick, Blair, & Maggs, 2008). In a study conducted by Higgin et al. (2013), demonstrated increased conditional correlation between impulsivity and offending (55% and 57% respectively). In a separate study conducted by Moffitt et al. (2001), found that among 18-year-old persistent offenders, youth who demonstrated an increased risk of repeat offense over time demonstrated more impulsivity than individuals who had reached brain maturation (Cohen & Casey, 2014; Moffitt, 2003).

Another element of cognitive executive functioning that can influence criminal behavior is social cognition (SC). SC equips an individual with social perception, social understanding, decision-making, and moral reasoning and is measured by looking at the neurological network, age, and cognitive ability or deficits (Arioli, Crespi, & Canessa, 2018; Palmer & Hollin, 1999; Pharo et al., 2011; Preckel, Kanske, & Singer, 2018; Smart, & Sanson, 2003). Pfeifer and Blakemore (2012) conducted a study examining emotional responses to experimental stimuli among participants between the ages of 10 and 22 using the International Affective Picture System (IAPS) tests. The study found that increased activity in the ventrolateral prefrontal cortex, an area responsible for regulating emotion, is positively correlated with participants' age (Pfeifer & Blakemore, 2012). Importantly, lower levels of SC can contribute to aggressive, explosive, and

violent behavior, suggesting that juveniles are at greater risk of these behaviors than adults (Mitchell & Beech, 2011).

In another relevant study, conducted by Spenser et al. (2015), examined the moral reasoning, empathic understanding, and theory of mind of male offenders and non-offenders between the ages of 18 to 25. The results indicated that young adult offenders scored lower than young adult non-offenders in all three categories. Specifically, young adult offenders lacked empathy and recognition of offensive utterances, which suggested a deficiency in the social understanding of others.

Reflecting the importance of the body of neuroscientific research on juvenile sentencing, the Supreme Court has reflected the understanding that brain development is progressive to demonstrate that in *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama* by holding juvenile offenders are less culpable of their crimes (Steinberg, 2013; Steinberg & Scott, 2003). The Supreme Court made these decisions based on the difference in maturity compared to fully mature adults, the offenders' heightened susceptibility to external influences, and the differences in character between juveniles and adults. Given this, the Supreme Court affirmed its position on neuroscience research. The Supreme Court's consideration of developmental maturity in their judicial sentence decision-making process for these cases can be more clearly understood using Focal Concerns Theory.

Focal Concerns Theory

Judicial sentence decision-making is a complex process that can be simplified using a focal concerns perspective. Sentencing researchers generally state that time

constraints and limited resources (i.e., information on the case and defendants) cause court actors to rely on generalizations and make ill informed decisions (Doerner & Demuth, 2010). Although sentencing guidelines provide judges with structure and advice, these guidelines limit the impact of extralegal factors on cases which can reinforce sentencing decision-making limitations (e.g. time constraints to make sentencing decisions, limited information on case, etc.).

Focal Concerns Theory, which was introduced by Steffensmeier et al. (1998), provides a theoretical framework for understanding how legal and extralegal factors influence judges' sentencing decisions (Hartley, 2014). Focal Concerns Theory (FCT) outlines into three components that influence these decisions: offenders' blameworthiness, the protection of the community, and the practical constraints and consequences of judges' decisions (Hartley, Maddan, & Spohn, 2007).

Blameworthiness

Blameworthiness is the primary sentencing determinant and is based on a judge's perception of an offender's culpability, or blame. The factors often used to assess blameworthiness are crime classification (misdemeanor and/or felony), criminal history, role in the crime, criminal intent, and history of victimization (Steffensmeier, Ulmer, & Kramer, 1998). The severity of the offense is the most influential in measuring blameworthiness. This is because blameworthiness is rooted in a philosophy of retributive punishment philosophy, which implies punishments should correspond with a crime in terms of justice and equality. However, it is important to note that stereotypes can overshadow this. When looking at age, judges are likely to associate young offenders

(18-20) as less worthy of blame when compared to slightly older young offenders (21-29) for the same crime. This is judges view teens under the age of 20 as more susceptible to external influence. Further, judges often view teens as more successful candidates for rehabilitation (Steffensmeier, Ulmer, & Kramer,1998).

Protection of the Community

The second concern, protection of the community, focuses on assessing risk and deterring the offender's future offending behavior (O'Neal & Spohn, 2017). Judges' typically use the following factors to assess the threat that an offender poses to the community: the nature of the crime, facts of the case, criminal record, and extra-legal factors (i.e., family history, education, employment status, weapon use, and/or drug dependency).In essence, protecting the community is both a pre-and post-cautionary measure to address the public's fear of crime. Although has the potential to be highly beneficial to the community, researchers argue that the concern for public safety causes judges to overcompensate and thereby instill harsher punishments and sanctions (Kurlycheck & Johnson, 2004). Such over-sentencing has been demonstrated through the increased imprisonment of minorities over the years; non- Hispanic white offenders (18-29) are less likely to be imprisoned and receive shorter sentences than African American offenders of the same age, who are believed to pose a greater risk to the community (Steffensmeier, Ulmer, & Kramer,1998).

Practical Constraints and Consequences

Lastly, practical constraints and consequences are often considered in the sentencing of offenders. For example, judges may consider whether sending an offender

to prison will cause a financial burden on their family or inhibit the offender from pursuing a college education. Factors used to measure this are the offender's mental health status, physical/emotional/mental needs, family responsibility, and the potential impact of the penalty. For a first-time, non-violent young offender, a judge might consider probation or house arrest so that the offender can attend school (rather than utilizing state funds to house the offender in the local jail). This decision could allow for state funds to be preserved and provide the offender with a second chance to reintegrate into society.

In summary, FCT provides an ideal framework for understanding judicial sentence decision-making, as it explains the factors that judges often consider while making sentencing decisions. However, time constraints still prevent judges from accurately making a sentencing decision; thus, judges utilize FCT perceptual shorthand (Spohn, 2002). FCT perceptual shorthand is based on stereotypes and attributions linked with offenders' characteristics, race, gender, and age (Hartley, Maddan, & Spohn, 2007). Although perceptual shorthand can be applied in a way that allows racial and gendered stereotypes to produce harsh sentences for some offenders, it has also yielded more lenient sentences for juvenile offenders; as seen in *Roper*, *Graham*, and *Miller*, offender age was a determinate in assessing the offender's blameworthiness (Peck, Leiber & Brubaker, 2014).

In applying the concepts of Focal Concern Theory, the Supreme Court based its ruling in *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama* on the neuroscience research that indicated juveniles' progressive lack of brain development

deems them less blameworthy of their crime. In doing this, the Supreme Court established that critical and methodical considerations must be used when applying severe sanctions. However, I conclude that this process does not only apply to juveniles but also youthful offenders, given that neuroscience research argues that brain development is progressive and youthful offenders are within the brain development age range. In this study I refer to this as the brain science spillover effect, a theory that the sentencing criterion for juveniles established by neuroscience research and the Supreme Courts' rationale in *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama* is applied to youthful offender for sentencing purposes.

CHAPTER 3- RESEARCH DESIGN AND METHOD

Current Study

This current study aims to fill a gap in the literature on the effects of legal and extralegal factors, specifically age, on the in/out prison sentence decision (the decision to incarcerate) and sentencing trend of youthful offenders. Within the existing literature, few studies focus on age and instead use it as a control variable or combine it with race or gender. Of these studies, age is limited to two primary groups, juveniles and adults. Researchers have found that offenders 18 and younger receive the most lenient sentences, offenders 50s and older receive lenient sentences, and offenders between 20 and 30 often receive the harshest sentences (Steffensmeier, Kramer, & Ulmer, 1995; 1998). Unfortunately, the cause for the age sentencing disparities is not widely known; additionally, there is scarce research on offenders who fall just outside the age range of juveniles but do not have the clinical maturity of an adult (Johnson, Blum, & Giedd, 2009).

Although the Supreme Court rulings in *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama* set a precedent for the lenient treatment of juveniles, the Supreme Court give credence to the neuroscience brain development argument that the brain develops progressively and extends up to the age of 29. Further, a lack of brain development negatively influences an individual's behavior. Therefore, the Supreme Court's logic would imply juveniles lenient treatment, prohibiting the death penalty and LWOP, applies to youthful offenders despite it not being a requirement or law. The study's primary hypothesis is that young adults would receive more lenient treatment

after the *Miller* ruling due to a brain science spillover effects. The brain science spillover effect is a theory that sentencing criterion for juveniles expands to youthful offenders because neuroscience research argues that brain development is progressive and extends to the age of 29 and the Supreme Courts rationale in three cases influences sentencing decision-making. The Supreme Court *Miller v. Alabama* decision was chosen as the timeseries point because the case encompasses the full sentencing treatment for juveniles based on the sentencing decision making of *Roper v. Simmons* and *Graham v. Florida*. Accordingly, this study investigates the effects of legal and extralegal factors, specifically age, on the in/out prison sentence decision and sentencing trend of youthful offenders.

Research Questions

In this quantitative project, I use Pennsylvania Commission Sentencing (PCS) data from 2001 to 2018 to answer the following research questions:

1. How does age affect sentencing outcomes for youthful offenders compared to other groups?
2. Has the sentencing treatment of youthful offenders harshened or become more lenient overtime, specifically after the Post-Miller ruling?

Description of Data

Researchers have noted that the PCS data offers rich information for studies on sentencing outcomes. The data consists of all felony and misdemeanor convictions in Pennsylvania and 500 variables that cover offense type, offender demographics, criminal history, judge name, sentence guidelines, most serious sanction per offense, and more. Additionally, although Pennsylvania enforced sentencing guidelines in 1982 to assist

judges in what type of sentence and sentence length to impose, the guidelines are designed to be applicable to other jurisdictions, making PCS data generalizable (Steffensmeier, Kramer, & Streifel, 1993).

The study dataset encompasses the most serious offenses per judicial proceeding and all offense types from 2001 to 2018. The total number of cases per data year ranges between 50,496 to 71,725 ($n=1,499,977$). The PCS data exhibits that the Hispanic population is underrepresented compared to other racial/ ethnic categories ($n=38,555$). This is likely due to misclassification error from the original PCS data as the PCS stopped reporting the Hispanic racial/ethnic category (Ulmer, Painter-Davis, & Tinik, 2016). To address this issue, I used the U.S. Census Bureau's "Hispanic Surname" list to identify the miscategorized offenders (MacDonald Raphael, 2020; Omori & Petersen, 2020; Ulmer, Painter-Davis, & Tinik, 2016). The surname list is a compilation of offenders who self-identify as Hispanic and have a baseline surname score of 75% or more (MacDonald Raphael, 2020; Omori & Petersen, 2020;). Using the Stata merge command, I merged and matched the Hispanic surname list with the dataset offender's last name variable and dropped all remaining unmatched offenders ($n=500$). This increased the Hispanic racial/ethnic category to 82,987. Although this practice is not ideal given the offender surname could reflect their marriage name rather than maiden name or ethnic origin, sentencing literature uses this approach to combat for racial and ethnic disparities in sentencing outcomes (MacDonald Raphael, 2020; Omori & Petersen, 2020; Ulmer, Painter-Davis, & Tinik, 2016). The dataset started with three gender categories (male, female, unknown); all cases with an unknown gender were deleted to make the

variable binary for the analyses ($n=1,105$). DUI offenses were also excluded from the dataset as this type of offense does not fit the classic most serious criminal offense/case profile ($n= 334,622$) (Ulmer & Johnson, 2004; Ulmer & Konefal, 2019). The final dataset included 1,163,750 cases; the yearly dataset breakdown is provided in Figure 2.

Sentencing research contends that sentencing decisions consist of two components: the decision to incarcerate (in-out decision) and the length of sentence (Kramer & Steffensmeier, 1993). For this study, I will focus on the decision to incarcerate, as it is the first decision judges make during the sentencing process. My primary dependent variable is in/out prison sentence decision, which is used as an indicator of whether an offender receives a prison sentence per offense.

Legal factors that are commonly found in sentencing research are also included in this study. Researchers argue that severity (Offense Gravity Score) and criminal history (Prior Record Score) are the most critical legal variables for sentencing decisions (Steffensmeier, Kramer, & Streifel, 1993; Ulmer, 2012). *Severity* is a 15-point ordinal measure of the severity of a crime based on the Pennsylvania crime classification. An offender's *criminal history* is an 8-point ordinal measure created by the Pennsylvania Sentencing Commission that includes an offender's past conviction including misdemeanors, felonies, and juvenile convictions. The study's 8-point measure resembles the PCS sentencing matrix with minor adjustments; offenders coded as "0" have no prior criminal history, "6" score is Repeat Felony Offender (RFEL), and "7" are Repeat Violent Offender (REVOC). *Trial* is a binary indicator of whether the offender took a plea bargain or not. "0" is coded as "no trial" which includes a negotiated guilty plea,

Nolo Contendere, non-negotiated guilty plea, and other. A code of “1” indicates that there was a trial and includes both bench and jury trials. *Presumptive sentence*, which is the combined effect of offense severity and criminal history, is a binary indicator of whether a prison sentence was recommended by the Pennsylvania sentence guideline (Doerner & Demuth, 2010). *Mandatory minimum* is also included as a binary indicator of whether a mandatory minimum sentence was applied. *Offense type* is a 6-category nominal indicator of the type of crime committed (homicide, other violent, property, drugs, other;); property serves as the reference category. The offenses included in other violent category are assault, kidnapping, rape, trafficking persons, guns, and robbery offenses. The property category includes arson, burglary, and theft offenses. The “other” category include fraud, criminal trespass, sex offender registry, stalking/ harassment, etc. *County* is a nominal indicator of the Pennsylvania county the offender was sentenced. *Postmiller* is a binary measure of the cases before and after *Miller v. Alabama* in 2012.

Three extralegal factors are included in the analyses. Offender *race* is a 4-category variable which indicates the race/ethnicity of the offender; non- Hispanic white is the reference category for African American, Hispanic, and other. *Male* indicates the offenders’ gender; female is the reference category. *Young adult* is a binary indicator of the offender age (in years) at the time of the sentence. This is separated into two categories, 29 and younger and 30 and older. A full description and coding of all data variables are provided in Figure 1.

Overview and Justification of Methodology

To address the research questions, I employed a series of logistic regressions to examine the age effect on sentencing outcomes for youthful offenders compared to other groups and sentencing treatment of youthful offenders over time. For this study, logistic regression is better suited given it provides interaction probability between each independent and dependent variable, which research question 1 addresses. Additionally, considering the large dataset, a statistical test of significance or structural equation modeling would not be able to differentiate error from inferences drawn from within the same sample (Lynch, 2019; Steffensmeier, & Motivans, 2000). Logistic regression is also more appealing because it can process the dataset's PCS dichotomous and continuous variables (Hartley, Maddan, & Spohn, 2007).

I modeled the sentence decision with each independent variable using logistic regression. Then drawing from the regression model, I used the margins command to report the relationship between the in/out prison sentence decision and independent variables. Average Marginal Effects (AME) will be used for easier interpretation and understanding of the margins between of each independent variable and in/out prison sentence decision. To understand young adults in/ out decision- state prison over time, I ran another logistic regression adding the data year variable. Then using the marginsplot I graphed the results to provide a directional sentencing trend of youthful offenders. The next chapter discusses the results of the analysis.

CHAPTER 4 - RESULTS

This section will discuss the results from the logistic regression models for effects of legal and extralegal factors, specifically age, on the in/out prison sentence decision and sentencing trend of youthful offenders. Two tables and four figures are included in this section as well. Each table reports the average marginal effects (AME), odds ratio (OR), standard error (SE), and p-value (p) for each independent variable reported.

First, Table 1 reports the descriptive statistics. The data sample includes 1,163,750 individual-level sentences, which capture the most serious offense per judicial proceeding for each sentencing event reported to the sentencing commission from 2001 to 2018. The majority of the cases are dated before the 2012 *Miller v. Alabama* ruling (64.91%).

Among the offenders, 59.35% are non-Hispanic white, 30.27% are African American, 7.13% are Hispanic, and 3.24% are other. The dataset is predominantly male at 78.39% with the remaining being female (21.61%). The average offender age at sentencing is 32, however the majority of the offenders fall between the ages of 29 years and younger (50.93%). Offenders have an average offense severity level of 3.84 and most have minimal to none criminal history (1.59). Approximately, 96.82% of offenders take a plea bargain and 3.18% go to trial. Offenders are frequently convicted of drug offenses (29.26%), followed closely by “other” offenses (25.35%), property offenses (25.15%), other violent offenses (19.62%), and homicide (0.73%). Of the convictions included, 1.64% require a mandatory minimum sentence.

The outcome variable, in/out state prison sentence decision, makes up 14% of the sentencing outcome for the most serious offenses per judicial proceeding. The sentencing

outcome is exclusively state penitentiary prison convictions, excluding all county or jail incarcerations.

I next examined the results of the Logistic Regression Prison Model (Model 1) which examines how the legal and extralegal variables impact the likelihood of receiving a prison sentence. Consistent with prior research, offense severity and criminal history proved to be some of the strongest in/out prison decision indicators (Steffensmeier, Kramer, & Streifel, 1993; Steffensmeier, Ulmer, & Kramer, 1998; Ulmer, 2012). Each increase in offense severity and criminal history score is associated with an average marginal effect (AME) indicating 4% and 3% increased likelihood of imprisonment respectively (OR=1.98, $p<0.000$; OR=1.72, $p<0.000$). Thus, for example, an individual falling under the highest offense severity level (level 15) would have a 60% greater likelihood of imprisonment than an individual in the lowest severity level category (level 1).

The strongest in/out prison decision indicators are mandatory minimum and trial. The AME indicates that the imprisonment of an offender who takes a trial conviction versus a plea bargain is increased by 7% (OR=3.02, $p<0.000$). Offenses with a required mandatory minimum sentence increase the likelihood of prison by 19% (OR=24.37, $p<0.000$). Relative to property offenses, homicides have the highest probability (AME=4%, OR=1.75, $p<0.000$), other violent offenses have the lowest probability (AME=-1%, OR=0.85, $p<0.000$), and drugs and “other” offenses have minimal the probability (AME=0%, OR=0.95, $p<0.001$; AME=0%, OR=0.95, $p<0.000$) of imprisonment.

Considering the effects of gender, males' probability of imprisonment increases by 3% versus females (OR=1.71, $p<0.000$). The strongest difference in probability of imprisonment relative to non-Hispanic white is Hispanic by 2% (OR=1.36, $p<0.000$), followed by African American by 1% (OR=1.24, $p<0.000$), and then the "other" race category with no statistically significant effect ($p=0.941$). For the main effect, offenders aged 29 and younger are less likely to receive prison sentence compared to offenders aged 30 and older. Overall, the likelihood of imprisonment is slightly lower after the 2012 *Miller v. Alabama* ruling compared to before the *Miller v. Alabama*.

Next, I consider the interaction effect of offenders aged 29 and younger (young adult) and post-Miller cases on in/out prison decision (Model 2). Old adults (30 and older) pre-Miller have a 0.1388% probability of imprisonment ($p<0.000$), old adults post-Miller have a 0.1258% probability of imprisonment ($p<0.000$), young adults pre-Miller have 0.1484% probability of imprisonment ($p<0.000$), and young adults post-Miller have a 0.1346% probability of imprisonment. The difference in AME for old adults pre-Miller and older adults post-Miller is 0.0130%. Additionally, the difference in AME for young adult pre-Miller and young adult post-Miller is 0.0138%. This indicates young adult offenders are treated more leniently after the *Miller* ruling than before, however older adults are treated even more leniently compared to young adults before and after the *Miller* ruling. This finding does not support the study's primary hypothesis that young adults would receive more lenient treatment after the Miller ruling due to a brain science spillover effects. All offenders appear to be treated more leniently in the most recent years, but young adults do not fare better than older offenders after the *Miller* ruling. In

conclusion, the results demonstrate that a time trend is not associated with more lenient sentencing for youthful offenders.

As supplemental analysis, an additional model estimated the AMEs for each sentencing year rather than the pre/post-Miller variable; results provided in Model 3. Model 3 logistic regression model odds ratios generally remained the same as in Model 1. The margins plot indicates young adults (29 and younger) are about 1% more likely to be imprisoned in the earlier years compared to older adults (30 and older) and drop by less than a tenth of a percent across the timeframe. However, Model 4, which estimated the AMEs for the older adult effect across each year, argues that older adults are about 0.1% less likely to be imprisoned than young adults. This indicates that the sentencing leniency between young and older adults is minor with a difference of 0.0008%. The next chapter interprets the results as it relates to youthful offenders' sentencing outcomes.

CHAPTER 5- DISCUSSION AND CONCLUSION

This study aims to advance research on judicial sentence decision-making. This contributes to sentencing literature by examining the effects of legal and extralegal factors, specifically age, on the in/out prison sentence decision (in-out decision) and sentencing trend of youthful offenders. The primary hypothesis is that youthful offenders receive more lenient sentencing due to a brain science spillover effect, the theory that sentencing criterion for juveniles expands to youthful offenders because neuroscience research argues that brain development is progressive and extends to the age of 29 and the Supreme Courts rationale in three cases influences sentencing decision-making. The hypothesis is analyzed using the influence of existing brain development research on the Supreme Court's ruling in *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama*, and examines judicial sentence decision-making through Focal Concerns Theory to synthesize how a brain science spillover effect has impacted youthful offender sentencing. Using the Pennsylvania Commission Sentencing (PCS) data from 2001 to 2018, I model a series of logistics regressions to answer the following questions (1) how does age affect sentencing outcomes for youthful offenders compared to other groups and (2) has the sentencing treatment of youthful offenders harshened or become more lenient over time, specifically after the Post- Miller ruling.

Discussion

Table 1 findings are as follows. Most of the offender population is male and aged between 30 to 39. However, once the offenders' age variable is condensed into two groups, young adults (29 and younger) slightly make up the majority of the data. The

offenders' race is primarily non- Hispanic white, followed by African American, Hispanic, and other. Regarding legal factors, very few offenses require a mandatory minimum sentence, and offenders usually take a plea bargain instead of going to trial. Moreover, offenders mostly commit drug offenses, and subsequently other offenses, property offenses, other violent offenses, and homicide offenses.

The outcome variable, prison, makes up about 14% of the in/out prison sentence decisions for the cases in the data. The low prison outcome indicates that judges do not impose prison sentences very frequently which can suggest a baseline level of general leniency. However, it can still be argued that applying any prison sentence is considered harsh treatment in and of itself.

Several findings, displayed in Model 1, stand out for further elaboration. Considering the main effects of race on sentencing outcomes, African American and Hispanic offenders are about 1% and 2% (respectively) more likely to receive a prison sentence than non- Hispanic white offenders. Although this is not a substantial effect, it demonstrates judges' harmful usage of FCT perceptual shorthand (Feldmeyer et al., 2015; Steffensmeier, Painter-Davis, & Ulmer, 2017; Ulmer, 2012). This suggest that stereotyping of Hispanics and African Americans, specifically the perception of being more violent, dangerous, and aggressive than others, cause more severe sanctions to be applied. Therefore, the difference in sentencing outcomes for identical crimes is potentially dependent on the color of the offender's skin. Notably, the disparity of the effect of race on sentencing outcomes has the potential to be more significant with the inclusion of racial disproportionalities such as over-policing, case processing, and trial

dismissals, among others. However, the simple presence of a difference is of the same significance. It is recommended that race disproportionality should be better captured in future research.

Consistent with prior sentencing literature, the results show that offense severity and criminal history are the most important predictors of sentencing outcomes. Offenders with high offense severity and or extensive criminal history have a greater likelihood of imprisonment than offenders with minimal criminal history or less serious offenses. The results found that homicide offenses are four times more likely to receive a prison sentence than compared to property offenses.

Furthermore, judges use these independent variables to determine an offender's *blameworthiness*. Research suggests judges view low offense severity and criminal history as an offender being less culpable; thus, judges will not impose severe sanctions. The results further support this finding, as drug and other offenses do not affect the chance of prison sentences, and other violent offenses have a decreased likelihood of a prison sentence. For higher offense severity and extensive criminal history, judges view the offender as having more culpability and endangerment to the community; therefore, harsh sanctions, such as a prison sentence, are required. This also reflects FCT's *protection of the community*, as judges protect the public by incarcerating frequent or dangerous offenders to prevent future crimes. Therefore, it is concluded that the combination of offense severity and criminal history determines FCT's blameworthiness and protection of the community, which further influences the sentencing outcome.

Overall, the study unveils evidence of sentencing outcome disparities for young adults and other groups. The study's primary hypothesis is that young adults after the Miller ruling would receive more lenient treatment due to a brain science spillover effects. The brain science spillover effect is the theory that the sentencing criterion for juveniles established by the Supreme Courts' rationale in *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama* is used to sentence youthful offenders. The rationale prohibiting the death penalty and life without parole (LWOP) for juveniles are based upon the difference in juveniles' lack of maturity, responsibility, heightened susceptibility to outside influence, and fickle character compared to adults (Gullone & Moore, 2000; Krause, 2015; Monahan, Steinberg, & Piquero, 2015). Neuroscience research further suggests brain development is progressive; therefore, juvenile, and youthful offenders' low development limits their capacity to conduct a cost-benefit analysis to understand the long-term consequences of their crime, thus decreasing offenders' culpability and driving judges to impose lenient sentencing.

Surprisingly, results demonstrate that old adult offenders (30 and older) before and after the *Miller* ruling receive the most lenient sentencing decisions, followed closely by young adults (29 and younger) after the *Miller* ruling, and lastly young adult offenders before the *Miller* ruling receive the harshest sentencing. This finding does not fully support the primary hypothesis as young adults are treated more lenient after the Miller ruling. However, it is not due to the brain science spillover effect, as all offenders appear to be treated more leniently sentenced in recent years. Furthermore, older adults after the *Miller* ruling have a stronger interaction effect (AME= 0.1258) than young adults after

the *Miller* ruling (AME= 0.1346). This indicated that while judges appeared to become more lenient over time, there is a marginal difference in the probability of imprisonment from old adults and young adult after the Miller ruling.

There are several explanations for this, but I suggest two. Overall, the lenient sentencing treatment for all offenders could result from the lack of mandatory minimum sentences associated with the most serious offenses in the data. This indicates judges practice individualized case assessment as established by *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama*. Regarding youthful offenders not being treated more leniently, the findings suggest judges are once more influenced by the negative stereotypes that impact FCT perceptual shorthand. As mentioned, because young people are often characterized as more reckless or dangerous than their counterparts, judges might be inclined to apply harsh sanctions to deter offenders. On the other hand, this could be equally unnecessary as the age crime curve theory argues that risk-taking behavior peaks during late adolescence and descends during young adulthood (Stolzenberg & D'Alessio, 2008). Therefore, whether influential or not, the brain science spillover effect is not enough to overcome the traditional stereotypes of youthful offenders in order to be treated more leniently.

Additionally, the results indicate that young adults still do not fare better than older offenders after the Miller ruling. The literature states it is due to the curvilinear relationship between age and sentencing; offenders under 18 and above 50 receive more lenient treatment than offenders between 20 and 49 (Steffensmeier, Ulmer & Kramer, 1998). However, when investigating the difference between young adults and older adults

in/out prison sentence decisions, there is not a significant association between lenient sentencing and young adults. More specifically, young adults are about 1% more likely to be imprisoned in earlier years than older adults and drop by less than a tenth of a percent across the timeframe. But the old adult effect across each year show that old adults are about 0.1% less likely to be imprisoned than young adults.

This marginal change is unsurprising because although youthful offenders are considered individuals from 18 to 29, neuroscience research emphasizes the progression of brain development. Therefore, if the brain spillover effect is influential, it is plausible that judges hold different-aged youthful offenders more accountable for their crimes than others. For example, a 22-year-old youthful offender might be sentenced more leniently than a 28-year-old youthful offender. For this study, the youthful offender age range could have skewed the sentencing leniency difference between the two age categories. It would be advisable to separate youthful offenders (25 and below) from young adults; further detail on how to address this is discussed in future research section. The study results reflect that offender age has a minor effect on judges' in/out prison sentence decisions for young adults, thus indicating judges may or may not be acting consistent with the primary hypothesis. In conclusion, the study results reveal that all offenders are more leniently sentenced, and age has a relatively minor impact on judicial sentence decision-making; therefore, brain science spillover effect is not the cause of lenient sentencing.

Limitations

This study exhibits limitations as well. There are several essential controls missing from the logistic regression model; these controls include pretrial detention, employment status, and victim information. Other potential extralegal factors are whether the defendant had dependents, level of education, and socioeconomic status. In addition, the data only reflect the outcome of one jurisdiction; therefore, the results could be different for other places, given the difference in demographics, case processing, and strength or weakness of the jurisdiction. The data also only included the most serious convictions from 2001 to 2018; given this restriction, this could also cause conflict with the results being generalizable. Regarding the conceptualization of age for the study, the study also should have dropped all juvenile offenders and narrowed the youthful offender age range. Including juveniles in the youthful offender age range could skew the results to reflect sentencing leniency based on the law rather than the influence of the law on cases. Lastly, the procedure of addressing the low reporting for the Hispanic racial/ethnic group could be seen as a limitation as offenders' last names could reflect their marriage name rather than their maiden name or ethnic origin, thus misidentifying an offender for another race/ ethnic group; however, this is standard practice in recent sentencing research. Despite the limitations, this study provides a valuable foundation for future research.

Future Research

Further research should build upon the study's framework to examine the sentencing decisions for youthful offenders. First, sentencing outcomes should be

broadened to include sentence length, and total incarceration. As stated earlier, sentencing literature consists of two components, the decision to incarcerate (in-out decision) and the sentence length. Researchers argue that sentence length further predicts the impact of case variables that influence judges' decision-making. Expanding the model to include total incarceration also provides insight into the in/out decision; total incarceration can include offenders serving a jail and prison sentence. Secondly, young adult reference groups can be defined differently, either narrower or wider, than in the study (29 and younger). Ideally, youthful offenders would be categorized on its own as 19 to 25, and compared to juveniles (18 and below), young adults (25- 30), and older adults (30 and above) in future research. Lastly, it is worth adding a qualitative component, such as interviewing judges or reviewing court recordings, to gain insight into judges' sentencing decisions. This component could address the impact of FCT's blameworthiness, protection of the community, and practical constraints and consequences on sentencing decisions. In light of the study findings, future research should continue to explore the decision-making factors of judges for offenders that fall within the youthful age category and treatment of youthful offenders over the course of time in order to fully understand, review, and critique of judicial sentence decision-making.

Conclusion

Given that sentencing literature is well-saturated with information on juveniles and adults, this study had an opportunity to extend sentence outcome research on the effect of age to include youthful offenders (18-29). The study investigates the effects of

legal and extralegal factors, specifically age, on the in/out prison sentence decision (in-out decision) and sentencing trend of youthful offenders. Considering that the Supreme Court juvenile decisions, *Roper v. Simmons*, *Graham v. Florida*, and *Miller v. Alabama*, are based on scientific findings that distinguish juveniles from adults, it is hypothesized that young adults convicted after *Miller v. Alabama* receive more lenient sentencing due to a brain science spillover effect. The results demonstrate that all offenders are sentenced leniently after the *Miller* ruling; therefore, a brain science spillover effect is not the cause or reasoning for sentencing leniency. Furthermore, when examined, the offender's age had minor significant effect on in/out prison sentence decision, as prison sentences moderately disadvantaged youthful offenders over time. The results also emphasize some sentencing literature consistencies, such as minority offenders are sentenced more harshly than non-Hispanic white offenders and offense severity and criminal history heavily impact the sentencing outcome. Although this study has limitations, it can serve as the foundation for future research on the effects of age on judicial sentence decision-making.

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