EXAMINING CRIMINAL JUSTICE CONTACT ON FUTURE OUTCOMES: DOES AGE AT FIRST ARREST OR INCARCERATION IMPACT FUTURE MENTAL HEALTH AND SUBSTANCE USE?

By

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The current study sought to investigate the impact of age of first arrest and age of first incarceration on current substance use and mental health outcomes. The increasing prevalence of mass incarceration in the United States warrants the need to further understand the widespread impacts. Utilizing the framework of life-course theory, the researcher seeks to understand the impact of a significant event such as arrest or incarceration on the life course. Secondary data was analyzed using the National Survey of Youth 1997 cohort. Findings highlight some significance of both age of arrest and incarceration on current substance use, but not mental health outcomes. Overall, results using regression suggest age of first arrest and incarceration have an impact on current substance use. More specifically, those first arrested or incarcerated at older ages have higher levels of current substance use. However, there was no significant relationship between age of first arrest or incarceration on current mental health outcomes. Sex was found to moderate the interaction between age of first arrest and substance use, highlighting a correlation for females but not males.

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CHAPTER 1: INTRODUCTION

Globally, the United States has the highest rate of incarceration, with roughly 655 incarcerated individuals per 100,000 citizens (Sentencing Project, 2020). Over the past few decades, incarceration rates have increased dramatically and the rise of mass incarceration in the United States has become a salient concern. In 2016, there were roughly 2.2 million individuals in U.S. jails and prisons, compared to an estimated 500,000 individuals in 1980 (Sentencing Project, 2020). This substantial growth warrants the need for research to further understand the impacts of involvement with the criminal justice system. Research highlights the impact of incarceration on the health and well-being of confined individuals (Yi et al., 2016); however, the impact of other variables, such as age of first arrest, are less explored, despite an estimated 30% (almost 1 in 3) of individuals in the U.S. being arrested by the age of 23, an 8% increase since the 1960's (Brame et al., 2012).

While there are formal institutions in place intended to control crime, the idea of informal social control emphasizes that societally constructed norms dictate order which can result in discrimination or social marginalization. Informal social controls connect individuals to one another and institutions such as family, school, education, or work. Laub and Sampson's (1993) age-graded theory introduced the notion that as individual's age, informal social controls alter and influence one's life course development. Criminal involvement and desistance, the cessation of involvement in criminal activity (Laub & Sampson, 2001), are impacted by informal social controls (Laub & Sampson, 1993), and life events in adolescence and adulthood have the potential to redirect criminal trajectories (Sampson & Laub, 2016). Timing is a critical factor as the occurrence of stressful life events at younger ages initiates social interferences that lead to consequences which persist throughout adulthood (Baćak et al., 2019).

Contextual variables and timing of life events influence future outcomes (Elder & Rockwell 1979) and experiencing stressful life events is a risk factor for poor mental health (Edwards et al., 2019). The age at which an individual experiences a turning point may also have lasting effects on their mental health (Elder, 1993). Contact with the criminal justice system can be one such turning point and can create a plethora of consequences which become embedded throughout one's lifespan. First confinement occurring during adolescence or emerging adulthood parallels the transition to adulthood, which is an important developmental stage (Wakefield & Apel, 2016). The criminal label associated with having a history of incarceration can impede the successful transition to adulthood (Baćak et al., 2019). An individual who is incarcerated during the transition to adulthood may have a higher likelihood of experiencing negative social outcomes compared to their never incarcerated counterparts and those who were first incarcerated in adulthood (Kim, 2015).

Criminal justice contact, such as arrest, can include verbal abuse, property searches, and physical contact which may be traumatic primary stressors (Brunsen & Weitzer, 2008). Secondary stressors which coincide with arrest and incarceration are associated with the consequential impacts correlated to informal social controls, such as discrimination and stigma, that make it difficult to successfully reintegrate into society (Baćak et al., 2019). Stigmas associated with criminal records can impact reentry and lead to social exclusion by limiting job and social opportunities upon release (Evans et al., 2018), and have been shown to impact mental health in midlife by disrupting resources, social relationships, and self-esteem (Kim, 2015). These stressors can impede the ability to find a job or garner an income, and when accumulated, lead to other complications such as trouble securing housing, re-involvement with criminal activity, or substance use (Baćak et al., 2019).

Given the potential for arrest and incarceration to serve as turning points in an individual's trajectory and the potential impact on mental health, the aim of the current study is to investigate the relationship between age of first arrest and age of first incarceration on depression and substance use in emerging and early adulthood. First incarceration is a significant marker of one's life course trajectory as it initiates a chain of associated events that can be challenging to redirect (Elder, 1993; Baćak et al., 2019). The age at first arrest or confinement may indicate a disruption to normative psychosocial development, thus impacting the transition to adulthood and increasing the risk for negative outcomes, including health and well-being (Lambie & Randall, 2013; Sugie & Turney, 2017). Utilizing the age of first arrest and first incarceration to investigate future outcomes regarding mental health and substance use has rarely been examined in previous research. Further investigation can offer an enhanced understanding of the intersectionality of when an event occurs, turning points, and how they correlate with future outcomes.

CHAPTER 2: LITERATURE REVIEW

A critical factor for adult development is an individual's capacity to manage intersectional engagement within multiple domains of life such as work, relationships, or health. Involvement, perceived control, and quality of connection across domains predict life course trajectories, highlighted by age-graded and socially constructed opportunities (Shane & Heckhausen, 2016). Life events can be both a product and predictor of available opportunities. These opportunities vary based on experiences and events in the life course, which have differential impacts depending on when they occur. For some, the arrangement of experiences and events in the life course is, in part, governed by the age at onset of criminal offending (Elder, 1988; Simpson et al., 2016).

An individual's life experiences and events dictate their current circumstances (Elder, 1998). Human agency allows choice in selecting which life path to follow; however, decisions are conditional to the limitations and opportunities of contextual forces (Elder, 1998). Individual life experiences lead to variations in path selection. Incarceration is a life event which impacts the trajectory of one's life path, disrupting the normative timeline and influencing future opportunities and human agency. Discrimination and stigma coinciding with criminal records can cause reintegration challenges leading to limited job and social opportunities in the future (Evans et al., 2018). Arrest and incarceration are both connected to the manifestation of a criminal record. Hartwell, Fisher, and Davis (2010) found that incarceration caused damaging effects on social relationships during confinement, which can be specifically destructive for psychosocial development, thus impacting future social ties. Although those who are arrested may not always end up incarcerated, it is important to investigate whether there are similar impacts.

Arrest is a less studied life event which can impact life course trajectories and the availability of opportunities across life domains. An estimated 3.5 million individuals are arrested at least once each year (Jones & Sawyer, 2019), and the estimated arrest rate for the U.S. is 3,251.5 arrests per 100,000 citizens (Persons Arrested, 2018). Despite these numbers, not all individuals who are arrested end up convicted and incarcerated - some remain behind bars until their trial and others make bail and are released shortly after their arrest (Sawyer & Wagner, 2020). Nonetheless, examining the impacts of age at first incarceration alone is not enough to construct a thorough understanding of the impacts of criminal justice system involvement. Examining both the age of incarceration and the age of arrest is necessary as the age of these events can impact one's life course trajectory, potentially creating obstacles in the future which may influence individual outcomes regarding mental health and substance use.

Life Course Theory

Available decisions and outcomes which govern one's life course are formed by choice and circumstance (Elder, 1977). The life course includes an individual's pathways, timing, length, sequence of events, and assumed roles (Elder & Rockwell, 1979). The trajectory is a path of development over one's lifespan shaped by a series of events and transitions within their life course (Elder, 1977), and turning points are changes in the life course which can redirect these trajectories (Laub & Sampson, 1993). Experiences which coincide with these events frame the foundation for life stages and transitions (Elder, 1977). Depending on age, life experiences, such as arrest or incarceration, can impact role expectations and cause attainable opportunities to fluctuate. One must manage the multiplicity of demands placed upon them by their varying roles. Societally constructed timelines are not universally applicable to all lives, meaning that unexpected occurrences can cause deviation. Individuals who deviate from the expected life

course trajectory may receive less support and have more limited opportunities for normative experiences (Elder, 1977; Elder & Rockwell, 1979). Deviations from the expected life course trajectory can have variable impacts on each person's outcomes.

Life events are age-graded transitions which initiate changes in societal status (Laub & Sampson, 1993). While some life events can be positive, many life events can be negative or stressful and can cause unwanted or negative shifts in the life-course trajectory. Arrest and incarceration are life events which can be either positive or negative turning points depending on the outcomes. They may further encourage deviance, thus being a negative turning point, or they may act as deterrents which reduce future crime, thus having a positive impact (Doherty et al., 2016). Human agency is also important to note as it allows choice in selecting which path to follow. While human agency directly influences path selection, outlying variables such as SES, race, and other influence indirectly the agency an individual has.

According to Elder (1998), human agency is the concept that an individual "constructs their life course through the choices and actions they take within the opportunities and constraints of history and social circumstances" (p. 4). The decisions made by individuals are conditional to the limitations and opportunities of contextual factors such as race, SES, and peer influence (Elder, 1998). Systemic barriers regarding provide challenges to minority populations to seek employment and equal treatment, that can impact the arrest or incarceration experience. SES and social environment can be barriers to positive life trajectories and can encourage deviant behavior, these events may lead to fewer opportunities and choices along the life pathway which may lead to incarceration or arrest (Evans et al., 2018). The notion of cumulative disadvantage highlights how consequences of delinquency, such as incarceration, can weaken

later bonds to society, which can then increase the likelihood of further criminal involvement (Sampson & Laub, 2018).

Maintaining positive relationships with family and peers is critical in helping to maintain social bonds, which are essential components of life course theory (Edwards et al., 2019); however, the restrictive nature of incarceration can hinder the ability to maintain these relationships. Further, the confines of incarceration may strengthen social bonds with other individuals within a facility, leading to stronger criminal identity association (Cesaroni & Peterson-Badali, 2010). The social impacts that come with arrest and incarceration may also limit the formation and attainability of social relationships once released as well, as the associated negative stigmas can isolate individuals from positive social systems (Evans et al., 2018). This disruption of social relationships can lead to reductions in opportunities and life path options, this hindering the life course trajectory (Elder, 1998).

An individual's life course is molded by the historical time and location of experiencing events within their lifetime (Elder, 1998). The rise of mass incarceration within the United States is a current historical marker and has been for the past few decades. Incarceration rates for females nearly doubled throughout this period, leading to more incarcerated females than ever before (Wildeman, 2009). The prison boom also impacted juvenile offenders. In 1999, over 77,000 youth were confined to a correctional facility. Fortunately, that number has fallen to just under 27,000 in 2017 (Sentencing Project, 2020). Rates of incarceration accumulated the most growth in the 1980s and 1990s but did not reach peak until 2007 (Neal & Rick, 2016). Changes in societal contexts due to the influence of historical events can variably impact the rates of criminal justice contact for specific groups of people. If incarceration rates are drastically increasing, more individuals are likely to be faced with instances of criminal justice contact. The

prison boom lead to more individuals being arrested and incarcerated than ever before (Sentencing Project, 2020), this could have shifted the trajectory of society and the cultural norms surrounding arrest and incarceration.

Age of Individual and Impact on Social Bonds and Institutions

The age an individual is when they experience certain events can impact the salience of said event (Elder, 1998), and the involvement of formal interventions, such as arrest and incarceration, can delay an individual's timeline of life events (Baćak et al., 2019). Early onset of criminal activity, occurring between adolescence and young adulthood, increases risks for one's future by weakening societal bonds (Laub & Sampson, 1993; Wildeman & Muller, 2012) which can impact life course involvement in crime (Laub & Sampson, 1993). Social relationships play a central role during adolescence (Kerpelman & Pittman, 2018; Laub & Sampson, 1990), and a first arrest or incarceration which occurs during this critical period may restrict the opportunities for attaining social capital, thus weakening social bonds.

The weakening of social bonds, which is a critical factor in relation to desistance (Laub & Sampson, 1993), can influence a person's ability to achieve age-graded social roles and opportunities (Allen et al., 2014). Pettus-Davis et al. (2017) found that emerging adults who were involved with the criminal justice system had damaged social relationships due to incarceration. These individuals had higher levels of support from family than peers, highlighting the possible difficulty in forming social bonds with nonfamilial individuals, and disruption to the peer support that they once had. Social bonds link individuals to each other and to social institutions such as education, work, and family (Laub & Sampson, 1993). The disruptions that come from criminal justice involvement can hinder the development of prosocial bonds, and the timing of when the

disruption occurs can have variable impacts based on age-graded societal structures, such as attaining one's first job, entering a first marriage, or starting college (Laub, 1990).

Criminal justice contact, including being stopped, arrested, convicted, or incarcerated, has been associated with lower involvement with medical, financial, educational, or career institutions (Brayne, 2014). System avoidance that correlates with criminal justice contact further marginalizes this population from institutions which can help desist from crime and reintegrate into society. Lack of attachment to societal institutions is also correlated with poor health outcomes (Brayne, 2014). In a study of individuals who had any criminal justice contact, participants were 31% less likely to obtain medical care if needed, and those who had been arrested were 29% less likely to seek medical care if needed. Those who do not seek medical care when needed may be left with untreated mental health issues, such as depressive symptoms, which can be exacerbated over time. Mental health is one of the outcomes influenced by the turning point of incarceration (Wildeman & Muller, 2012); therefore, not seeking care when experiencing mental health symptoms puts this population at an additional disadvantage.

Criminal Justice Contact and Mental Health

Involvement in criminal activity increases the risk for poor mental health outcomes. When looking at previous research on incarcerated individuals and mental health, indications are that those previously incarcerated have higher rates of almost all common psychiatric disorders and have a 45% higher likelihood of experiencing major depression over the life course (Schnittker et al., 2012). Studies focusing on formerly incarcerated fathers highlight similar results where participants were found to have higher rates of depression compared to father's who have never been incarcerated (Steadman et al., 2009; Yi et al., 2016). Verbruggen et al. (2016) investigated adult life adjustment of individuals previously incarcerated in a juvenile

detention center and found that both men and women experienced challenges in multiple life domains when compared to a population with no criminal history. The previously incarcerated sample had higher rates of contact with mental health services, more substance abuse, lower employment engagement, and poorer family formation.

Other studies have also noted associations between when incarceration occurs and mental health outcomes. Baćak et al. (2019) investigated criminal justice contact and correlations with mental health and found that those who were incarcerated at earlier ages had higher rates of using psychiatric services within the past ten years. Barnert et al. (2018) investigated demographic associations in childhood incarceration to see if age of first incarceration impacted adult health. This study found that individuals who had younger ages of first incarceration (ages 7-13 years) were noted to have the highest rates of poor mental health outcomes, compared to individuals who were first incarcerated between 14 and 32 years old, or those who had no incarceration history. In the sample, 37.7% of participants who were first incarcerated between the ages of 7 and 13 years old reported current adult depression, and 28.1% reported suicidality. Comparatively, 23.7% of those incarcerated between the ages of 14-32 reported adult depression and 10.1% reported suicidality. Similarly, Edwards et al. (2019) also found higher levels of depression in adults who had a criminal offending history in adolescence and early adulthood.

Utilizing a sample of young adults, Esposito et al. (2017) found that those with a history of incarceration reported worse current health than their never incarcerated counterparts. After breaking down their sample into two groups based on age of first incarceration, the mean age for the first group being 18.6 and for the second being 25.2, they found that the first group was 6% more likely to suffer from depression than their never incarcerated counterparts and the second group was 8% more likely. In a similar study by Kim (2015), men first incarcerated during

emerging adulthood between the ages of 18 and 24 reported lower levels of both general and mental health at midlife compared to their never incarcerated counterparts. While there were no statistical differences found between those incarcerated between 18 and 24 and those incarcerated between 25 and 40 years old, those who were first incarcerated between 25 and 40 also did not significantly differ from their never incarcerated counterparts. This finding is important to note, as it contradicts previous research indicating individuals with any criminal justice contact have poorer mental health outcomes than those without criminal justice contact, and points to the potential importance of examining age at criminal justice contact in relation to outcomes (Steadman et al., 2009; Sugie & Turney, 2017; Verbruggen et al., 2016; Yi et al., 2016).

The contradictory nature of these findings warrants further research on the outcomes of age at first incarceration on mental health. The limited literature on age of first arrest and mental health outcomes also creates a need for further investigation. The uncertain and anticipatory nature of an arrest can indirectly impact mental health by eliciting secondary stressors such as discrimination and stigma (Sugie & Turney, 2017). In a study regarding criminal justice contact done by Sugie and Turney (2017), arrest, without conviction or incarceration, was found to be correlated with poorer mental health outcomes such as higher incidences of anxiety and depression. While the negative impact of arrest on mental health is present, it is scarcely researched as any research in this area primarily focuses on individuals who have been incarcerated and/or the age of individual at that incarceration. Therefore, the current study aims to bridge a gap in the literature by also assessing the impact of age at first arrest on mental health.

Criminal Justice Contact and Substance Use

Literature regarding criminal justice contact and substance use focuses heavily on the instances of substance use leading to system involvement, and minimally on the instances of system involvement leading to substance use. An investigation the connection between age of first arrest, sexual activity, and drug use with adult risk behaviors among incarcerated women (Tillson et al, 2017). Results indicated that participants who were arrested at younger ages had higher likelihood of reporting injecting drugs or overdosing. The average age of first arrest for the sample was 23.3 years; however, every additional year before one's first arrest decreased the odds of ever injecting drugs by 5% (Tillson et al., 2017).

In contrast, Welty and colleagues (2017) published a 12-year longitudinal study investigating how age at detention, sex, and ethnicity impact substance use disorder trajectories for a group of individuals detained during adolescence. Twelve years following detention, 81.4% of participants had some degree of a substance use disorder, and of that sample 65% were associated with an adolescent-limited substance use trajectory that aligned with substance use trajectories of non-detained youth. Younger participants were more likely to be associated with this adolescent-limited trajectory compared to older participants who were associated with persistent and serious substance use. Younger participants were also more likely to get help for their substance use compared to older participants.

Doherty et al. (2016) examined long-term substance abuse outcomes (within the past 10 years) among African American participants aged 33-42 years and found that those who had no arrest history had the lowest rates of substance use issues at midlife (Doherty et al., 2016). Arrest was associated with a two to three times higher likelihood of both men and women experiencing substance abuse problems at midlife; incarceration, however, resulted in a slight decrease in

substance use among the sample, possibly attributed to treatment while in custody or required detoxification. Given the limited research in this specific area, and the conflicting results involving both age of when events occur and type of event, further research comparing the outcomes of age at first arrest and age at first incarceration are warranted to further our understanding.

Race and Sex

Race and sex are demographic variables that may play a role in criminal justice contact outcomes (Brayne, 2014), but there is limited examination of these variables as moderators. Lau et al. (2018) investigated the associations between sex, race/ethnicity, and behavioral health problems as they relate to the age and outcome of first arrest, and found that significantly more males than females were arrested, and females were treated more leniently and tended to get more mental health services than males. This aids in highlighting that arrest and incarceration are far less common for females than males, demonstrating an element of rarity in the life event of arrest or incarceration for females (Doherty et al. (2016). Since incarceration is a relatively uncommon life experience for women compared to men, the stigma associated with any incarceration history will heighten depressive symptoms despite the age or duration of detention (Zhao et al., 2019). Steadman et al. (2009) found that incarcerated women are twice as likely to report mental health issues than men. On the other hand, some research has noted that adult outcomes for previously incarcerated women were more positive than for the males, despite the women having documented more troublesome backgrounds (Verbuggen et al., 2016).

In the study by Welty et el., (2017) less than 10% of African Americans belonged to the most severe and persistent substance use trajectory, the majority of individuals in the severe trajectories were White, followed by Hispanics. Despite these findings that White individuals

have higher rates of substance use trajectories, the war on drugs in the U.S. has consistently targeted African Americans. Social and economic disadvantages are more prevalent among racial minorities, and the additional variable of criminal justice contact can be strenuous on one's mental health (Sugie & Turney, 2017). Research has shown that African American youth were less likely than their White peers to get mental health assistance, and African American youth were first arrested at younger ages than White and Hispanic youth (Lau et al., 2018). While there is limited research examining race as a moderator in the relationship between incarceration and mental health, in sample of women with and without histories of incarceration, being African American was a strong predictor for experiencing depressive symptoms upon release from detention (Zhao et al., 2019). Examining race and sex as moderating variables allows for a more nuanced look at the impact of age at first arrest and incarceration on young adult outcomes and could offer important implications for future prevention and intervention work.

Current Study

Age of an individual at their first arrest can redirect the life course trajectory by negatively impacting the ability to attain resources and social relationships, which has been connected to mental health and substance use later in life. Studies that investigated incarceration found that earlier incarceration, during the time when peer influence is detrimental to identity and self-concept, can influence adult role transitions, educational attainability, and social bonds (Elder, 1998). The impacts caused by criminal justice contact on educational attainment, vocational success, social relationships, or one's established life can lead to individuals struggling with mental health or substance use in the future (Baćak et al., 2019).

While not all arrests lead to incarceration, an individual's first arrest initiates official involvement with the criminal justice system. This first arrest can serve as a turning point which

shifts one's life course trajectory. Previous research examines incarceration and first incarceration on mental health outcomes, however there is a gap in the literature when it comes to other criminal justice contact, such as arrest. Further, the literature is limited regarding the age of an individual when these events occur on substance use outcomes in particular, and in our understanding of race and sex in these relationships.

The current study will address the following research questions:

Research Question 1: Does age of first arrest impact depressive symptoms in early adulthood?

Research Question 1a: Is this relationship moderated by race?

Research Question 1b: Is this relationship moderated by sex?

Research Question 2: Does age of first arrest impact substance use in early adulthood?

Research Question 2a: Is this relationship moderated by race?

Research Question 2b: Is this relationship moderated by sex?

Research Question 3: Does age of first incarceration impact depressive symptoms in early adulthood?

Research Question 3a: Is this relationship moderated by race?

Research Question 3b: Is this relationship moderated by sex?

Research Question 4: Does age of first incarceration impact substance use in early adulthood?

Research Question 4a: Is this relationship moderated by race?

Research Question 4b: Is this relationship moderated by sex?

CHAPTER 3: METHODS

Sample

The current study utilized secondary data drawn from the National Longitudinal Survey of Youth (NLSY). The NLSY97 cohort is a sample of Americans born between 1980-1984. Data collection for this longitudinal project began in 1997 and included 8,984 participants aged 12-17 years. Since then, the cohort has been surveyed 18 times. For this study, data was used from the initial survey in 1997 and from round 17 of the interviews in 2015. At the round 17 interview conducted in 2015, participants were between 31-35 years old. The study was voluntary, and participants were told they were not required to answer any questions they chose not to and could end the interview at any time. There was monetary compensation for participation.

Measures

Socio-demographic Variables

The original sample was comprised of 4,599 (51%) males and 4,385 (49%) females. Race and ethnicity of the original sample was broken down as follows: Whites 4,665 (51.9%), African American, non-Hispanic, 2,335 (26%), Hispanic or Latino, 1,901 (21.2%), and Mixed 83 (0.9%). In order to account for racial disparities, the cohort is comprised of two independent probability samples, in which one is an oversample of minority respondents, to provide sufficient numbers of minority participants for analysis. In round 17 of the data collection from 2015, participants reported the highest educational degree received to date. Of the sample, 41% had obtained a high school diploma, 20% a bachelor's degree, 13% received their GED, 9% had received no degree, 8% obtained an associate degree, and the remaining 4% a professional degree, Master's, or PhD. For moderation purposes, race was collapsed, dummy variables were created, and two groups

were utilized, White (51.9%) and non-White (48.1%). For analytical purposes, White was coded as 1, and non-white was coded as 0. For sex, male was coded as 1, female was coded as 0.

Arrest History

Arrest history data is comprised of variables that include monthly documentation of arrests for each participant beginning at age 12. Participants were asked if they have ever been arrested by the police or taken into custody for an offense, and the total number of occurrences. Earliest arrest date was reported by the respondent, and if the respondent had a reported arrest but did not provide the date, the variables were coded as missing. To calculate the age of first arrest, the individual's birth year was subtracted from the year of first arrest. In round one, data was gathered on earliest arrest date, however future rounds gathered number of arrests since the last interview, and data on first arrest if it occurred during that time. For this study, earliest arrest date will be used in addition to participant's date of birth to determine age of first arrest.

Incarceration History

Incarceration history data is comprised of a variable that reports age at first incarceration. The NLSY data included the age of first incarceration as a variable, therefore no calculation was needed. Earliest entry date into incarceration was reported by the respondent.

Mental Health

Mental health measures were comprised of a series of questions regarding frequency of certain feelings within the past month. Developed by Veit and Ware in the late 1970's, the five-item questionnaire is a derivative from the Mental Health Inventory 5 (MHI-5; see Appendix A). Responses were indicated on a four-point scale (0-3), with one meaning none of the time and 3 meaning all of the time. Some questions were reverse coded to ensure data consistency so that the higher the score, the more depressive symptoms one felt.

Substance Use

Substance use was reported via questions regarding alcohol and drugs. In regard to alcohol use, participants were asked to indicate frequency of alcohol consumption, which is defined as a can or bottle of beer, glass of wine, mixed drink, or shot of liquor. Three questions regarding alcohol use were included, "Have you had a drink of an alcoholic beverage in the past since the date of last interview? (By a drink we mean a can or bottle of beer, a glass of wine, a mixed drink, or a shot of liquor.)" and **"**During the last 30 days, on how many days did you have one or more drinks of an alcoholic beverage?".

In regard to drugs such as cocaine, crack, heroin, or other substance used for the purpose of getting high, participants were asked questions regarding frequency of use. Two questions included "Excluding marijuana and alcohol, since the date of last interview, have you used any drugs like cocaine, crack, heroin, or crystal meth, or any other substance not prescribed by a doctor, in order to get high or to achieve an altered state?" and "Since the date of last interview, how many times would you estimate that you took this drug or other substance?". For this study, marijuana was excluded as there can be complications in reporting due to legalization in many states. Alcohol and drug use since last interview were combined for the analysis, while number of days alcohol was consumed in the past 30 days and number of times drugs were consumed since last interview were analyzed separately.

Analytic Strategy

The current study used IBM SPSS version 27.0 (IBM Corp, 2020) to conduct all analyses. The reported arrest, incarceration, mental health, and substance use information were downloaded into SPSS. Missing values were list wide deleted through SPSS. Linear regression was utilized in order to examine the relationship between age of first incarceration and the

outcome variables of depression and substance use, and age of first arrest and the outcome variables of depression and substance use. Covariates were driven by empirical evidence demonstrating previous associations between age of experiencing life events and race and sex (Elder, 1998), and by bivariate Pearson correlation. To determine if race and/or sex moderate these relationships, hierarchical multiple regression with an interaction term was used.

CHAPTER 4: RESULTS

Preliminary Analyses

Prior to testing specific research questions, preliminary assumption testing was conducted to check for normality, homoscedasticity, linearity, and multicollinearity. All data met the assumptions. Descriptive statistics (see Table 1) and correlations (see Table 2) for outcome variables were also computed prior to running any analyses. Guided by previous research and a Bivariate Pearson Correlation, sex and race were used as covariates with depression, substance use, and number of days alcohol was consumed within the past 30 days. Regarding the number of times drugs were used since day of last interview, only race utilized as a covariate.

Table 1

Variable descriptive statistics

	N	Min.	Max.	*M*	*SD*	Skewness	Kurtosis
Age in 1997	920	12.00	37.00	22.8630	4.6754	.463	-.410
Sex	3160	.00	1.00	.6807	.46628	-.776	-1.399
Race	3160	1.00	4.00	2.6456	1.3344	-.105	-1.783
Age at first incarceration	920	12.00	37.00	22.8630	4.6754	.463	-.410
Age at first arrest	3152	5.00	37.00	18.7925	4.8995	.830	.697
Depression	2541	.00	3.00	2.1217	.55324	-.758	.598
Substance use	2478	.00	1.00	.3880	.27045	-.103	-.221
Number of days alcohol consumed	1720	.00	30	8.4070	8.56611	1.227	.445
Number of times done drugs SDLI	143	.00	500.00	69.0559	127.144	2.294	4.303

Note. Standard Deviation (*SD)*, Since date of last interview (SDLI)

Table 2

Correlation matrix

	1	2	3	4	5	6
Depression	-	-	-	-	-	-
Sex	.0125**	-	-	-	-	-
Race	-.065**	,012	-	-	-	-
Number of days Alcohol consumed	-.093**	.158**	.051**	-	-	-
Number of times Done drugs SDLI	-.188**	-.129	.143*	-.251**	-	-
Substance use	-.093**	.052**	.142**	.110**	-.216**	-

Note. **p<.01; *p<.05

Age of First Arrest and Depression

Regression was used to examine the relationship between age of first arrest and current depressive symptoms (RQ1). Results showed a nonsignificant relationship between age of first arrest and current depressive symptoms, ($F(3, 2533) = 39.60$, $p = .090$; $R^2 = .045$). Despite not meeting criteria to report significance, these results were found to approach significance ($p < .1$) (Table 3).

Table 3

Regression of age of arrest on depression

Variables	B	SE	β	*t*	*p*
1 (Constant)	2.108	.051		41.151	.000
Sex	.229	.023	.196	10.070	.000
Race	-.026	.008	-.062	-3.208	.001
Age of first arrest	-.004	.002	-.033	-1.695	.090~

Note. $^{**}p<.01$; $^{*}p<.05$; approaching significance $^{\sim}p<.1$ unstandardized beta (B), Coefficients standard error (SE), standardized beta (β), significance (*p)*

Age of First Arrest and Substance Use

Regression was utilized for research question two which examined the relationship between age of first arrest and current substance use behaviors (RQ2). Results found a significant relationship between age of first arrest and substance use overall ($F(3, 2471) = 11.808$, $p = .003$; $R^2 = .014$; Table 4). For the current sample, those who had a higher age of first arrest also reported a higher rate of current substance use.

Table 4

Regression of age of arrest on substance use

Variables	B	SE	β	*t*	*p*
1 (Constant)	.267	.026		10.380	.000
Sex	.005	.011	.009	.448	.654
Race	.021	.004	.104	5.210	.000
Age of first arrest	.003	.001	.060	2.985	.003*

Note. $^{**}p<.01$; $^{*}p<.05$

Regression was also used to examine the relationship between age of first arrest and two additional substance use outcome variables; there was no significant relationship found for the number of days alcohol was consumed in the past 30 days ($F(3, 1714) = 9.936$, $p = .975$; $R^2 = .017$; Table 5), or the number of times drugs were done since the date of last interview ($F(2,142) = 2.845$, $p = .664$; $R^2 = .039$; Table 6).

Table 5

Regression of age of arrest on # days consumed alcohol in last 30 days

Variables	B	SE	β	*t*	*p*
1 (Constant)	6.629	1.002		6.614	.000
Sex	2.339	.431	.131	5.425	.000
Race	.078	.156	.012	.498	.618
Age of first arrest	.001	.041	.001	.031	.975

Table 6

Regression of age of arrest on # times used drugs SDLI

Variables	B	SE	β	*t*	*p*
1 (Constant)	21.180	46.490		.456	.649
Race	21.172	8.950	.196	2.364	.019
Age of first arrest	-.834	1.914	-.036	-.436	.664

Age of First Incarceration and Depression

Regression was used to examine the relationship between age of first incarceration and current levels of depression (RQ3; Table 7 on page 23). We did not find a significant relationship between age of first incarceration and depression ($F(3, 738) = 19.722$, $p = .358$; $R^2 = .075$).

Table 7

Regression of age of incarceration on depression

Variables	B	SE	β	*t*	*p*
1 (Constant)	1.956	.121		16.146	.000
Sex	.370	.051	.259	7.188	.000
Race	-.016	.016	-.037	-1.021	.307
Age of first incarceration	-.004	.004	-.033	-.919	.358

Age of First Incarceration and Substance Use

Regression was used to examine the relationship between age of first incarceration and current substance use behaviors (RQ4, Table 8). Results found a significant relationship between age of first incarceration and substance use overall ($F(3, 664) = 4.717$, $p = .004$; $R^2 = .021$; Table 8). For the current sample, those who had a higher age of first incarceration also reported a higher rate of current substance use.

Table 8

Regression of age of incarceration on substance use

Variables	B	SE	β	*t*	*p*
1 (Constant)	.209	.065		3.216	.001
Sex	-.035	.027	-.050	-1.282	.200
Race	.013	.009	.057	1.468	.142
Age of first incarceration	.007	.002	.112	2.887	.004*

Note. **$p<.01$; *$p<.05$

Regression was also used to examine the relationship between age of first incarceration and two additional substance use outcome variables; there was no significant relationship found for the number of days alcohol was consumed in the past 30 days ($F(3, 412) = .340$, $p = .539$; $R^2 = .002$; Table 9), or the number of times drugs were done since the date of last interview ($F(2,56) = 1.718$, $p = .907$; $R^2 = .060$; Table 10).

Table 9

Regression of age of incarceration on # days consumed alcohol in last 30 days

Variables	B	SE	β	*t*	*p*
1 (Constant)	7.754	2.578		3.008	.003
Sex	.516	1.040	.025	.496	.620
Race	-.218	.335	-.032	-.652	.515
Age of first incarceration	.058	.094	.030	.614	.539

Table 10

Regression of age of incarceration on # times used drugs SDLI

Variables	B	SE	β	*t*	*p*
1 (Constant)	3.356	96.402		.039	.969
Race	25.923	14.302	.248	1.812	.075
Age of first incarceration	-.396	3.368	-.016	-.118	.907

Sex and Race as Moderators

Only two relationships were found to be significant, the relationship between age of first arrest and substance use and age of first incarceration and substance use. The relationship between age of first arrest and depression approached significance, however, did not meet criteria to be reported as statistically significant. Due to these findings, we only examined race and sex as moderators of age of first arrest and substance use (RQ2a, RQ2b) and age of first incarceration and substance use (RQ4a, RQ4b).

An age of first arrest and sex interaction term was created, and hierarchical regression was used. Females were coded as 0 and males as 1. Analyses revealed that sex significantly moderated the relationship of age of first arrest and substance use ($F(4,2471) = 10.214$, $p = .021$; $R^2 = .016$; Table 11). For females, those who had a higher age of first arrest reported higher rates of current substance use, but this relationship was not significant for males.

Table 11

Age of first arrest and sex interaction on substance use

Model (2)	B	SE	β	*t*	*p*
(Constant)	.329	.012		26.925	.000
Age of first arrest	.004	.001	.067	3.290	.001
Race	.021	.004	.106	5.288	.000
Sex centered	.007	.011	.012	.606	.544
Age of arrest and sex	-.005	.002	-.047	-2.317	.021*

Note. **$p<.01$; *$p<.05$

Female = 0 Male = 1

Race was not found to be a significant moderator of the relationship between age of first arrest and substance use ($F(4,2471) = 7.062$, $p = .161$; $R^2 = .011$; Table 12).

Table 12

Age of first arrest and race interaction on substance use

Model (2)	B	SE	β	*t*	*p*
(Constant)	.386	.009		41.859	.000
Age of first arrest	.003	.001	.055	2.723	.007
Race centered	.057	.011	.086	4.290	.000
Sex	.006	.011	.010	.487	.626
Age of arrest and race	-.003	.002	-.028	-1.403	.161

Separate hierarchical regression analyses revealed that sex did not moderate the relationship between age of first incarceration and substance use ($F(4,664) = 3.533$, $p = .966$; $R^2 = .021$; Table 13), nor did race ($F(4,664) = 3.257$, $p = .719$; $R^2 = .019$; Table 14).

Table 13

Age of first incarceration and sex interaction on substance use

Model (2)	B	SE	β	*t*	*p*
(Constant)	.348	.026		13.196	.000
Age of first incarceration	.007	.003	.111	2.580	.010
Race	.013	.009	.057	1.467	.143
Sex centered	-.035	.027	-.050	-1.273	.204
Age of incarceration and sex	.000	.005	.002	.043	.966

Table 14

Age of first incarceration and race interaction on substance use

Model (2)	B	SE	β	*t*	*p*
(Constant)	.401	.024		16.909	.000
Age of first incarceration	.007	.002	.115	2.955	.003
Race centered	.022	.023	.037	.950	.342
Sex	-.036	.027	-.052	-1.338	.181
Age of incarceration and race	.002	.005	.014	.361	.719

CHAPTER 5: DISCUSSION

The increasing prevalence of mass incarceration in the United States warrants the need to further understand the widespread impacts. Within the past four decades, the rise of mass incarceration has also come with a rise in arrest rates, where 1 in 3 youth are arrested before the age of 23 (Brame et al., 2012). The rise of mass incarceration has led to an increase in research regarding the impacts of incarceration on health and well-being (Yi et al., 2016), however other types of criminal justice involvement, such as impact of arrest, are lacking in the literature. Arrest and conviction occur more frequently than incarceration (Sugie & Turney, 2017). A magnified emphasis on incarceration lacks consideration for a larger population of individuals who may have been arrested but not confined, as not all those who are arrested end up incarcerated.

Life course theory includes, timing, pathways, length, sequence of events, and assumed roles of an individual (Elder & Rockwell, 1979). Significant life events such as criminal justice involvement can impact the trajectory of an individual's life course (Sampson & Laub, 2016). To understand the impact of a significant event on the life course, it is imperative to examine the age of the individual when that event occurred. The impacts caused by criminal justice contact on one's education, career, and social life may be associated with mental health or substance use in the future (Baćak et al., 2019). The onset of justice system involvement can lead to a negative stigma and an accumulation of further impacts, and age may be detrimental to understanding these impacts (Pratt et al., 2016).

The historical timing of mass incarceration and surging arrest rates aligns with the timing of our sample being born and reaching adolescence. Particularly, the sample would have reached adolescence at the time of mass incarceration's peak, as incarceration rates garnered the most

growth in the 1980s and 1990s but did not reach their peak until 2007 (Neal & Rick, 2016). Therefore, the sample would be reaching a critical point in their life course development at the same time the U.S. reached a critical point in criminal justice system involvement. Both historical time and the age of the individual are important contextual variables to consider when discussing the results of the current study.

Most prior studies have examined the variable of incarceration and not arrest. For some individuals, incidents of arrest were also associated with a period of incarceration, whereas for others the arrest may have been the only event (Zhao et al., 2019). Future studies may aim to examine differences in arrests followed by a period of incarceration versus arrests that were not followed by incarceration. The current study sought to investigate the impact of age of first arrest and incarceration on current substance use and mental health outcomes, while looking at race and sex as moderators. Findings highlight some significance of both age of arrest and incarceration on current substance use, but not mental health outcomes.

Age of First Arrest and Incarceration on Mental Health Outcomes

Results from this analysis did not find a relationship between age at first arrest and mental health outcomes. Due to the lack of literature regarding age at first arrest and mental health outcomes, this finding neither supports nor contradicts previous research. There may be a number of unexamined variables, such as the notion of cumulative disadvantage, which play a role in mental health outcomes. Zhao et al. (2019) noted that while age of first incarceration was not associated with depressive symptoms upon release, experiences of cumulative disadvantage such as childhood trauma, prior abuse, and marijuana use in the past year were associated. Combined, pre-existing variables and criminal justice contact my play a role in future mental health (Zhao et al., 2019). Examining the occurrence of pre-existing variables such as prior

mental health issues, abuse, or trauma in conjunction with age at first arrest may not only provide further understanding about the age at first arrest and mental health outcomes, but additionally illuminate any associations in the age at first arrest and various forms of prior cumulative disadvantage.

Another potential reason for the lack of association is the possibility of mental health issues being present prior to the first arrest. It is estimated that around 17% of adult arrests involve individuals with serious mental illness and around 70% of juveniles involved in the justice system have a mental health condition (Bailey, 2020). Criminal justice contact can be a cause or consequence of other life domains, such as mental illness (Pratt et al. 2016). Early criminal justice contact has been found to be associated with pre-existing risk factors such as mental health issues (Barnert et al., 2018), and these mental health issues may play a role in the association between incarceration and future mental health. The prior risk factor of mental health, especially if untreated, may be the cause of onset of offending. Therefore, the existence of a mental illness before arrest may be associated with the life event of getting arrested rather than the arrest leading to mental illness. This, as well as other contextual variables, should be considered in future studies to expand our understanding of this relationship.

Edwards et al. (2019) found that high-rate offenders who had more accumulated contacts with the criminal justice system had higher levels of anxiety and depression over time. Whereas offender groups that desisted, or discontinued criminal activity over time, only had higher rates of depression during their active periods of criminality (Edwards et al., 2018). Verbruggen et al. (2016) also found that the groups of offenders who desisted from crime had higher levels of life adjustment in adulthood than those who were chronic offenders. Offenders who had more incidences of criminal justice contact in general, may have higher rates of mental health issues,

despite the age of first arrest or incarceration. The cumulative disadvantage of experiencing multiple negative events may have more of an influence on one's future mental health, as these disadvantages make it more difficult to reintegrate into society.

Many offenders follow an adolescent limited trajectory, meaning they engage in criminal behavior during their adolescence and slowly desist from crime as they age (Edwards et al., 2018). Compared to life-course persistent offenders, who continue to offend throughout their lives, adolescent-limited offenders have more time to rebuild their social status. Life-course offenders continue to become more socially isolated, and over time lose friends, family and social opportunities as criminal involvement persists (Edwards et al., 2018). The ability to re-build one's social status can be significant as it allows individuals to obtain social bonds, careers, and education, which are significant to their mental health. Future research may aim to incorporate the number of arrests or incarcerations as a moderating variable. In addition, closely examining one's experience in the criminal justice system, as well as the duration of each experience may provide further understanding.

Contrary to most prior research, findings from this analysis did not find a relationship between age at first incarceration and mental health outcomes (Baćak et al., 2019; Barnert et al., 2018; Verbruggen et al., 2016). There is a limited amount of research noting similar findings. For example, Verbruggen et al. (2016) did find that men with adulthood incarceration did not show any differences in midlife health compared to their never incarcerated peers, however those incarcerated during emerging adulthood did have significant different levels of midlife health than their never incarcerated peers, this is likely linked to the fact that incarceration during adulthood may not lead to the loss of as many social and career opportunities as emerging adults, and these are significant factors that determine midlife health (Kim, 2015). Kim (2015) found no

significance between mental health outcomes among the various age groups and suggests that experiencing incarceration during adulthood may cause fewer losses of educational or employment opportunities, which play an important role in wellbeing. Therefore, findings from our current study add additional support to a small subset of the literature, citing no significant relationships between age at first incarceration and mental health outcomes.

Age of First Arrest and Incarceration on Substance Use Outcomes

Results from this study did find a relationship between both age of first arrest and age of first incarceration on substance use outcomes. Older ages of first arrest and incarceration were linked to higher reports of current substance use. The relationship between age of first arrest and substance use was moderated by sex, where significance was found for females and not males. Race was not found to moderate this relationship. Findings of the current study were almost opposite to the findings of Tillson et al. (2017) who found that out of a sample of incarcerated women, those arrested at younger ages had a higher likelihood injecting drugs or overdosing. Possible reasons for opposing results include differing forms of substance use among the studies, as Tillson et al., (2017) investigated injecting drugs, and our study investigated a combination of drugs and alcohol. With alcohol use being legal and more socially accepted than drug use (particularly injectable drugs), it is possible that the social acceptability played a role in how substance use is seen and defined by individuals.

Welty et al. (2017) highlighted that younger participants were more likely to be associated with the adolescent-limited substance use trajectory, where substance use ceased as they aged, compared to older participants who were associated with more persistent and severe substance use. These findings could mean that those who were first incarcerated at older ages, had more persistent and severe substance use issues, therefore their substance use may have been

prevalent throughout their life, despite when they were first incarcerated. Additionally, those who may have been incarcerated at younger ages, may have had access to treatment and rehabilitation, where the experience of incarceration served as a deterrent to future substance use (Baćak et al., 2019; Doherty et al., 2016). Our findings add to previously contradicting literature regarding age at criminal justice contact and substance use.

Incarceration may serve as a deterrent to future substance use, especially for those on parole, but once restrictions are lifted, they may be at higher risk (Baćak et al., 2019). Based on previous research, age is more of a factor for females, whereas males are more likely to be persistent users. Males were more likely to be in the most serious and persistent substance use group, therefore there may be an association for females as they are less likely to be in the chronic and persistent groups, where males already have and continue to be using substances (Welty et al., 2017). This could impact programming for females, therefore more research should be done to further understand the impact of age.

The relationship between older ages of arrest and incarceration on current substance use issues can be explained by the duration of time between variables. The duration of time between later ages of first arrest and incarceration and current experiences of substance use issues is shorter than the duration of time that would be present for first involvement occurring during adolescence. The shorter duration leads to less time to seek help and a more recent disruption in the life course, and additionally older individuals are less likely to seek help for substance use issues (Welty et al., 2017). The more recent this significant event occurs, the less time there is to redirect the life course trajectory after the disruption, which can account for the higher rates of substance use. Many previously incarcerated individuals tend to engage in system avoidance, leading to low involvement with social institutions, such as medical services or career

engagement (Brayne, 2014). If an individual has been more recently incarcerated, they may be less likely to seek out help for substance abuse issues and they may still be facing challenges attaining a job. The lack of a job, which has been shown to encourage positive adjustment post-release (Kim, 2015), in addition to not seeking help, may be why these individuals have higher rates of substance use. Arrest and incarceration can serve as a turning point in the life course trajectory; however, the impact is a process and does not happen abruptly (Laub & Sampson, 1993). A shorter duration between a first arrest or incarceration and incarceration current reports of substance use and the present, the less time an individual would have had time to seek help.

Limitations

Due to the aforementioned use of secondary data, the data analyses were limited to using the use of questionnaires for depression and substance use. This reduced the ability to run some combined analyses due to the wording of the questions. For example, some questions asked how many drinks were consumed since day of last interview, while the others asked how many times drugs were consumed since day of last interview. More significant findings may have been discovered if the data was more uniform and the range of statistical and analytical testing was broadened. Additionally, the data collected for the current study is comprised of individuals reaching adolescence during the prison boom. This may be a limitation as the sample reflects only a specific portion of individuals in similar age cohorts, whose lived experiences are occurring at the same historical time. Despite this, it can also be a strength that our data is collected from the same group of individuals, as we get to see results from the same cohort over time, and factors such as historical time are relevant to all participants in this cohort.

Self-reported data regarding criminal justice system involvement can yield errors in validity (Roberts & Wells, 2010). Since data collection is longitudinal and collected over a

period of time, retention rates drop each round of survey collection, meaning the original sample can be altered, leading to issues in reliability. Errors in reporting may have impacted the validity of the results for age of first arrest and incarceration. However, another strength of using the NLSY is that data was collected bi-annually, therefore the reports of arrest or incarceration have a higher likelihood of being more accurate based on memory.

Future Directions

The current study fills a gap in the literature regarding age at first arrest and current substance use and depression outcomes. Although there is some research on age at first incarceration and current substance use and depression outcomes, the literature lacks research on age at first arrest. Findings implicate that older ages of first arrest and incarceration are connected to higher rates of current substance use. However, results did not find significance in rates of depression. Future studies may consider investigating other mental health variables besides depression, such as anxiety and self-esteem. Implications for professionals may consider targeting substance abuse counseling for individuals who experience their first arrest or incarceration later in adulthood, as results indicate they are at a higher risk for facing substance use issues.

As previously mentioned, the variable of duration may play an important role. Since our findings highlighted that later ages of first arrest were at a higher risk of substance use, interventions may consider using the duration of time between arrest and the current time to inform programming. Specifically, programs catered towards female populations should be developed or further emphasized for women experiencing their first arrest later in adulthood. This information can be useful for policymakers and researchers when determining what interventions to utilize with this population.

Since there were significant findings in relation to substance use, further research may investigate more variables related to substance use instead of only number of times and number of days. Research may benefit from looking at individual substances and comparing them to each other. Additionally, it could be beneficial to look at the motivations for substance use. Variables that lead up to and are a direct cause of arrest and incarceration may lead to substance use and evaluating the motivations may provide further information. Substance use and depression were investigated as separate variables, however in the future research that utilizes depression as a moderating or mediating variable for the substance use outcome may impact these results and enhance the understanding of the link between age at first arrest and incarceration and current substance use. Using other moderators, such as trauma or other mental health variables besides depression could be significant.

The disruption of social bonds derived from criminal justice system involvement is well-documented. Therefore, possible outcomes of this disruption, such as substance use and depression, are two important variables in the investigation of criminal justice involvement outcomes. Future researchers may consider including number of involvements and the duration of each incarceration as additional factors that will further enhance the understanding of criminal justice involvement. Age at the initial incident along with the number of occurrences and duration may provide a more thorough understanding of the extend of one's criminal justice experience.

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APPENDIX A: MENTAL HEALTH INVENTORY 5 (MHI-5)

The Mental Health Inventory (MHI-5)

MHI-5

How much of the time during the last 4 weeks, have you....

1. (1) Been a very nervous person?
2. (2) Felt so down in the dumps that nothing could cheer you up?
3. (3) Felt calm and peaceful?
4. (4) Felt downhearted and blue?
5. (5) Been a happy person?

(a) All of the time
(b) Most of the time
(c) A good bit of the time
(d) Some of the time
(e) A little of the time
(f) At no time

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Not Human Subject Research Certification

From: Social/Behavioral IRB
To: Annelyse Iglesias
CC:
Kate Harcourt
Date: 1/26/2021
Re: UMCIRB 20-002979
Social/Behavioral IRB

On 1/26/21, the IRB Staff reviewed your proposed research and determined that it does not meet the federal definitions of research involving human participants, as applied by East Carolina University.

Therefore, it is with this determination that you may proceed with your research activity and no further action will be required. However, if you should want to modify your research activity, you must submit notification to the IRB before amending or altering this research activity to ensure that the proposed changes do not require additional UMCIRB review.

The UMCIRB appreciates your dedication to the ethical conduct of research. It is your responsibility to ensure that this research is being conducted in accordance with University policies and procedures, the ethical principles set forth in the Belmont Report, and the ethical standards of your profession. If you have questions or require additional information, please feel free to contact the UMCIRB office at 252-744-2914.

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Study.PI Name:
Study.Co-Investigators: