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The Impact of Attachment and Optimism on Delinquency

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THE IMPACT OF ATTACHMENT AND OPTIMISM ON DELINQUENCY

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Abstract

The purpose of this study is to assess if justice-involved juveniles' optimism toward future prospects mediates the relationship between parental and peer attachment and the likelihood of future delinquency. Theory and prior research support the argument that there is a negative relationship between parental and peer attachment and delinquency, and a negative relationship between optimism and delinquency. This study attempts to expand on this research by exploring whether parental and peer attachments influence delinquency through their influence on optimism for future prospects. This study utilizes data from the Pathways to Desistance Study, a panel study of seriously justice-involved youth, to assess that research question. The main findings of this study suggest that: parental attachment does not negatively influence delinquency directly when controlling for other factors; peer attachment positively predicts delinquency when controlling for other factors; optimism negatively predicts delinquency; and, parental and peer attachment are indirectly related to delinquency through the mediator of optimism. Policy implications include developing information and exercises on optimism within programming for at-risk and delinquent youth, especially for youth with low attachment to others, and providing trainings on how to encourage and build optimism for parents with at-risk and delinquent children.

Keywords: juvenile delinquency, parental attachment, peer attachment, optimism

Additionally, I would like to thank (soon-to-be Dr.) Christopher Forepaugh and Dr. Joshua Donnelly for being some of the best colleagues (AND friends) during my master's program. Chris, there are many a class that I would not have made it through without your tips and tricks. Thank you for all of your words of encouragement and positive feedback. Thank you for your help with Stats (I would not have made it through the class without you) and thank you for letting me break down my thesis to you on multiple occasions. Thank you for all of the candy and snacks, and good laughs, too. Dr. Donnelly, aka Josh, I don't think I can thank you enough for all of the support you've provided over the last year. I always appreciated being able to come into your office and honestly share about the hard days; and, although not always what I wanted to hear, you were honest with the realities of graduate school. Thank you for all of the check-ins, for always welcoming me into your office, and for helping me navigate SPSS while working on my thesis. Thank you for all of the laughs and making the long days a little bit more bearable.

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Dedication

I would like to dedicate the hard work and effort that went into completing this thesis to several people. First, and foremost, this thesis is dedicated to my younger siblings, David, Coen, and Kyah. The three of you were the reason I chose to go to college and graduate school. I made the commitment to my education in an effort to make a better future for all of us, and to show you that you can accomplish anything and everything that you put your mind to. I know there have been a lot of hard times, but there is so much light within each of you. I love the three of you more than you will ever know, I thank each of you the love and support you provide to me, and I can't wait to help each of you achieve the goals that you set for yourselves in any way that I can.

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Introduction

In the United States, over 500,000 delinquency cases are brought forth in the juvenile court annually, and over half of these cases result in an adjudication, or finding, of delinquency (Office of Juvenile Justice and Delinquency Prevention [OJJDP], 2019). Although the age-crime curve reports that many people will age out of crime and delinquency (Farrington, 1986), there is also evidence to show that there is a small amount of young people who participate in repeated delinquent behavior chronically, and do become justice-involved (Tracy, Wolfgang, & Figlio, 1990). The potential of consistent delinquency and justice involvement from childhood to adulthood proves to be problematic when considering the impact on long-term outcomes in adolescence, young adulthood, and beyond. For example, many delinquency- and justice-involved young people do not graduate from high school, which impacts their ability to find employment, inducing a greater probability of later offending and justice-involvement (Miller, 2019). In an effort to prevent this cycle of justice involvement, it is imperative to address delinquency as soon as it begins.

When looking at young people that have participated in persistent delinquent behavior, what can help them in desisting from continued delinquent behavior and, ultimately, justice involvement? There is a host of research within the fields of criminology and criminal justice that suggests why young people may begin to participate in delinquent and criminal behavior. However, there is far less research that assesses the reason behind why young people persist or desist in their participation of these behaviors (Ryan, Williams, & Courtney, 2013). Utilizing data from a longitudinal study on seriously justice-involved young people, this analysis will attempt to answer the following research question: Does a young person's optimism toward

future prospects mediate the relationship between parental and peer attachments and likelihood of delinquency?

The overall goal of this analysis is to contribute to existing literature on how optimism can be a mediating factor on the connection between attachment and delinquency. Research has previously been conducted on the relationship between attachment and delinquency (Haynie & Osgood, 2005; Hirschi, 1969; Howell, 2003; McGloin & Thomas, 2019; Nelson & Rubin, 1997; Warr, 2007) and optimism and delinquency (Athwani, Ola, Sharma, 2019; Cuevas, Wolff, & Baglivio, 2017; Mahler, Simmons, Frick, Steinberg, & Cauffman, 2017) respectively; it is the goal of this study to bring all three of these concepts together to see how they interact with each other. By analyzing how one's optimism for their future mediates their attachments and how they impact delinquency, this study hopes to inform future research on how to best support young people that are participating in delinquent behavior and provide suggestions on how future delinquency and justice involvement can be mitigated.

Literature Review

This literature review has several aims: to outline juvenile delinquency through the lens of Social Bond Theory (Hirschi, 1969); to describe how attachment (i.e., close and respected relationships) with parents and peers influences likelihood of delinquency; and, to describe extant literature investigating optimism, in terms of both aspirations (i.e., idealistic hopes for the future) and expectations (i.e., realistic expectations of future prospects), and its relationship to delinquency. The goal of this literature review is to identify how each of these components can contribute to a young person's persistence or desistance in delinquent behavior, and justify the measures used for this analysis.

Juvenile Delinquency and the Social Bond

Broadly, juvenile delinquency refers to a minor (i.e., a person aged 18 or younger, which is defined as the age of majority in the United States) participating in behavior that they are legally not allowed to (Dussich, 1989). Importantly, young people may engage in two distinct forms of delinquency: status offenses and criminal delinquency. Young people that engage in status offense behavior participate in delinquent acts that are only illegal for individuals under the age of 18 (Steinhart, 1996). Examples of a status offense could be a 16-year-old staying out past a city-wide curfew or being caught under the influence of alcohol. Criminal delinquency, on the other hand, is the participation in acts that are illegal for all persons, regardless of age. Some examples of criminal delinquency are theft, assault, and vandalism.

Several theoretical traditions describe how a young person comes to be delinquency-involved. Travis Hirschi's (1969) Social Bond Theory is arguably the most influential version of a control theory to date (Cullen, Agnew & Wilcox, 2018). Importantly, Hirschi's (1969) theory focuses on delinquency involvement and is thus the motivating theory for these analyses. As all

control theorists, Hirschi (1969) believed in the Hobbesian notion that all persons are self-interested and hedonistic, and will thus engage in potentially deviant behaviors to attain their desires. As such, Hirschi (1969) argued that the proper question to address within theory is, "what restrains an individual from deviancy?" Hirschi (1969) states that the reason people do not participate in delinquency is because they internalize informal social controls exerted by the four elements of the social bond and are thus restrained from crime. As is the focus of this study, Hirschi's (1969) social bond theory focuses on delinquency-involved young people and how a young person's bond to conventional others and institutions can influence their decision to break the law.

Hirschi (1969) identifies four major elements of the social bond that a youth needs to have in order to refrain or desist from delinquent behavior: attachment, commitment, involvement, and belief. Attachment involves a young person's emotional connection to others and institutions. Essentially, the concept of attachment states that a young person will not participate in crime because of the disappointment those that they are connected to might feel towards them, along with the disruption the act could bring to their relationships. Commitment is closely aligned with that of conformity. As such, an individual will determine the costs of participating in delinquent behavior, and what this could mean for the time and effort that they have invested in the conventional world. Therefore, a young person is more likely to participate in criminal activity when they do not feel they are committed to the larger conventional norms of society. Involvement refers to a young person's participation in conventional activities. The idea behind involvement is that a young person is so busy with their conventional activities that they do not have time to participate in criminal or delinquent activities. Finally, belief refers to a youth feeling societal norms and values are just and should be followed. However, there can be

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variation with the extent to which a young person feels that they should follow society's rules. Thus, if a youth rationalizes their behavior, they may be more likely to participate in criminal or delinquent activity. Essentially, Hirschi (1969) believes that it is the internalized, indirect control of society that can explain why some people, specifically young people, do not participate in criminal activity. Hirschi's (1969) social bond theory states that a young person will display an increased propensity to engage in a delinquent act when their bonds to society are weak or broken.

Many empirical studies examining social bonds and delinquency support Hirschi's theory that weak bonds are linked to juvenile delinquency (e.g., Wiatrowski & Anderson, 1987; Wiatrowski, Griswold, & Roberts, 1981). Specifically, Wiatrowski and colleagues (1981) considered the impact that each of the four elements of social bond theory had on delinquency. Although Wiatrowski and colleagues (1981) found each of the elements of social bond theory to be significantly inversely related to delinquency in some way, Wiatrowski & Anderson (1987) found that parental attachment and school attachment were particularly robust negative correlates of delinquency. This finding supports the idea that attachment is the strongest element of social bond theory. Additionally, Wiatrowski and colleagues' study found the element of commitment to be the least important, but this is likely because commitment is assessed within other elements of the model (1981).

Attachment and Delinquency

Although there are four elements of Hirschi's social bond theory, this study will narrow in on the element of attachment without analyzing the other three elements of commitment, involvement, and belief. Prior work validates attachment as more consistently related to delinquency than other elements of the social bond (Hirschi, 1969; Nelson & Rubin, 1997;

Wiatrowski & Anderson, 1987). Further, the element of attachment is explicitly defined and can be consistently measured, increasing its level of measurement reliability, and ultimately validity, across a multitude of studies (Schutt, 2019). For example, a participant within a study can share if they have a relationship with their parents, as well as other relationships in their life (though the degree of attachment may be difficult to measure at times). The process of measuring the other three elements of social bond theory can be much more inconsistent due to issues with definitional clarity, as the specifics of these elements are left to the interpretation of the researcher. The concept of commitment, for example, which can also be described as investment, does not specify how committed one needs to be with society at large for this element to play a role in one's decision to participate in delinquent or criminal activity. Hirschi does not say if investment is best measured by school attainment, job success, or success in extracurricular activities. This same argument can be made for the concept of involvement. Hirschi does not specify how often someone needs to be involved with activities that have been found to be successful at mitigating delinquency, or specifics on how frequently participation needs to occur for the element of involvement to be effective at mitigating participation in delinquent behavior. Finally, it is hard to determine what Hirschi actually meant regarding the element of belief, despite the description he provides. A vague definition of a theoretical element can lead to issues with the reliability of how the concept is measured across studies, which is a requirement for a measurement to be considered valid (Schutt, 2019).

Parental Attachment

In particular, social bond theory emphasizes the importance of parental attachment as strongly related to the likelihood of participation in delinquent acts. Hirschi (1969) believed that parental monitoring and involvement of parents in the lives of young people is linked to a young

person's internalization of conventional norms and values. Although Hirschi emphasized the importance of parental attachment as a way to mitigate delinquency and justice involvement for young people, he was not the first to do so. John Bowlby within the field of psychology conducted studies on, and emphasized the importance of, parental attachment for both a child's development and their level of justice involvement (Nelson & Rubin, 1997). In fact, it is argued that Bowlby's research informed the creation of Hirschi's social bond theory (Nelson & Rubin, 1997).

Prior work offers empirical evidence of the relationship between parental attachment and delinquency (Kotlaja, 2020; Wiatrowski & Anderson, 1987; Wiatrowski, Griswold, & Roberts, 1981). For example, Kotlaja (2020) conducted a study across 26 countries differentiating between individualistic and collectivist countries to determine the impact of parental attachment on delinquency. Kotlaja (2020) explains that individualistic countries are those that emphasize independence and an "every man for themselves" approach; whereas collectivist countries emphasize interdependence, where the goals of the group or society are placed above those of individuals. Generally speaking, across both individualist and collectivist countries, parental attachment impacted delinquency and family bonding inhibited delinquency (Kotlaja, 2020).

Hirschi (1969) believed that a young person could have relationships with many people, however he believed those with an individual's parents to be the most crucial for delinquency involvement. Much of the recent literature on justice-involved youth highlights the overlap of justice-involved young people's involvement with both the social welfare and criminal justice systems (Park, 2022), corroborating Hirschi's claim that parents are crucial in the explanation of delinquency.

Studies find that poor attachment to parents is associated with delinquent behavior (Schroeder, Higgins, & Mowen, 2014), regardless of age or gender (Hoeve, Stams, van der Put, Dubas, van der Laan, & Gerris, 2012). An important factor to note regarding attachment, is that an individual's level of parental attachment is dynamic and changes over the course of young adulthood (Schroder et al., 2014). Specifically, a young person's level of maternal attachment can be linked to delinquent offending for young people between the ages of 10-18; however, once a young person turns 18-years-old, maternal attachment no longer seems to be significant in relation to one's level of offending (Schroeder et al., 2014). However, it has also been found that, more generally, a young person's strong attachment to both parents is related to a lower likelihood of delinquent behavior than is strong attachment to just one parent (Rankin & Kern, 1994). This emphasizes the importance of a young person's attachment to both maternal and paternal figures.

Parents as a Risk Factor

Conversely, some studies suggest that parental relationships may be a risk factor for delinquency (Howell, 2003). For example, it has been found that growing up in a broken home, a parent's poor child-rearing skills, home discord and instability, and a parent's antisocial behavior are all statistically correlated with a young person's level of aggression and offending (Derzon, 2010). Several parental risk factors on delinquency have been identified within the literature and include: "single parenting, young mothers, abusive households, [and] antisocial or criminal fathers" (Derzon, 2010). Additionally, poor parenting, which can include a parent not teaching their child self-control, can lead a child to develop traits of impulsivity (Derzon, 2010; Gottfredson & Hirschi, 1990). Impulsive traits can lead to delinquent behavior (Gottfredson &

Hirschi, 1990), as young people with these traits may not be capable of weighing the consequences of their actions (Cornish & Clarke, 1986).

Although much of the previous literature argues that the family plays a large role in a young person's participation in delinquent or criminal behavior (Hirschi, 1969; Kotlaja, 2020; Nelson & Rubin, 1997; Schroeder at al., 2014), some researchers have argued that this association is overstated (Fagan & Wexler, 1987). For example, the leading perspective of social learning theory, which posits that children that are abused learn that abusive behavior is an acceptable response to situations that upset them, has played a large role in the literature regarding parental influence on delinquency (Fagan & Wexler, 1987). However, social learning theory lacks sufficient explanations of how exactly this antisocial learning process occurs (Fagan & Wexler, 1987). It instead may be argued that the social institutions of school and peer relationships may have a level of influence on delinquency that supersedes that of the family (Fagan & Wexler, 1987).

Peer Attachment

Additionally, Hirschi (1969) emphasized the importance of attachment to peers as related to the propensity to participate in delinquent behavior. As youth age, it is thought that parents become less of an influence on a young person's social bond, and that peers become more central to formation of the social bond (Hirschi, 1969; Laub & Sampson, 1993). There is a plethora of research on the connection between a young person's own delinquent and criminal behavior and that of their peer group (Haynie & Osgood, 2005; McGloin & Thomas, 2019). Indeed, peer delinquency is one of the most robust and consistent predictors of an individual's own delinquency. However, a far smaller amount of research has focused on the impact that prosocial friendships can have on a young person's desistance from delinquency and justice involvement

(Walters, 2019). This study will argue, like Hirschi, that if the research supports that antisocial peer friendships influence delinquency behaviors, then prosocial peer friendships will increase desistance in delinquency.

Although there is not an extensive amount of research on the concept of prosocial peers positively influencing behavior, there is some recent research within the field of criminal justice and criminology that has shown that there is a connection between prosocial friendships and a reduction in certain types of delinquency and criminal behavior (Walters, 2019). For example, it has been found that for young people that have previously participated in delinquent or criminal offending, spending time with prosocial peers has led to a reduction in drug use and property offending (Walters, 2019). Similarly, much of the social psychological research on an individual's close associations with others highlights the fact that these associations can influence conformity of individuals to social norms (often referred to as "normative influence") (Haynie & Osgood, 2005). As such, this study will use the prior work conducted by Hirschi and others to support the assumption that attachments in general, whether they are parental or peer-based, can impact both a young person's decision to participate in and desist from delinquent behavior. As a result, this study will assess how one's quality of friendship can affect optimism and its impact on delinquency.

Parental vs Peer Attachment

Although not the main focus of this study, it is worthwhile to address the different ways that both parental and peer attachments can influence the behavior of young people. Prior literature within the fields of criminal justice and criminology have assumed that parental attachments are negatively related to delinquent and criminal behavior, whereas peer attachments act more as a risk factor for such behaviors (Brauer & De Coster, 2015). Having such strict

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distinctions between the influence of parental versus peer attachments leads to confusion in what these relationships can really mean for young people and their decisions to participate in delinquent or criminal behavior. As a response, it has been argued that it may be beneficial to look at the influence of these attachments separately, through different theoretical lenses (Brauer & De Coster, 2015). Although this study looks at both parental and peer attachments through the lens of social bond theory, Brauer and De Coster (2015) argue that it may be more beneficial to view the influence of peer attachments on behavior through a lens of social learning theory, and the influence of parental attachments on behavior through a developmental perspective. Studies have found that parental and peer attachments can influence the delinquent and criminal behavior of young people in very distinct ways, and it's therefore best to review these respective influences through different theoretical lenses (Brauer & De Coster, 2015).

Optimism

The unfortunate reality of many delinquency- and justice-involved youth is that they have had a plethora of struggles throughout the course of their lives. For example, of the over 500,000 youth that are arrested annually (OJJDP, 2019), a disproportionate number are foster youth and have become, and continue to be, justice-involved due to neglect (Ryan et al., 2013). Similarly, it has been found that individuals who have experienced childhood maltreatment are at an increased likelihood of becoming involved with the juvenile justice system (Howell, 2003; Wolff & Baglivio, 2017). As such, delinquency- and justice-involved youth are likely to perceive less opportunity for future prospects.

Juveniles' perceived optimism can be measured through aspirations and expectations for themselves and their future. What is important to note is that aspirations and expectations are not the same thing; however, few studies make an effort to distinguish between the two (Khattab,

2015; Mahler et al., 2017). Mahler and colleagues (2017) created a straight-forward distinction between these two concepts: Aspirations refer to the importance one gives to achieving their goals, and expectations refer to the perceived chance of actually attaining one's goals. The present study focuses on aspirational measures of optimism for several reasons.

Previously, it was assumed that only one's expectations influenced and predicted the future delinquent behavior of young people; however, more recent research has shown that one's aspirations do impact their decision to participate in future delinquent and criminal behavior (Mahler et al., 2017). Higher levels of aspirations are associated with one's self-image, which connects with an individual's ability to better control their antisocial behavior (Cuevas et al., 2017). In fact, "… aspirations [have] predicted delinquency above and beyond the effect of expectations," (Mahler et al., 2017, p. 1511).

Additionally, prior research conducted by Robert Merton (1938) within strain theory highlights that participating in delinquent and criminal behavior may partly be a product of the disjunction between high aspirations and low expectations. Specifically, Merton argues that the origin of this strain is a result of not being able to meet culturally defined goals in socially approved ways (Merton, 1938). The social desire to achieve these goals (i.e., aspirations) without the corresponding opportunity to achieve such goals (i.e., expectations) are both proposed as necessary to induce offending. However, studies fail to find a consistent relationship between delinquency and the gap between aspirations and expectations (Farnworth & Lieber, 1989). Prior research also supports the understanding that aspirations and expectations are two different concepts, and, in measuring each of them respectively against one's optimism for their future, aspirations produce more robust measures of actual behavior than expectations (Mahler et al., 2017).

Optimism is also shown to be a product of parental attachments. Sewell, Haller, and Portes (1969) outline a theory of status attainment that explains how early structural factors in one's life can influence the opportunities, or goals, that a young person establishes for themselves. Sewell and colleagues (1969) emphasize the impact that parental and peer relationships can have on a young person's perception of the goals that they are expected to achieve. These parental and peer relationships directly influence the aspirations a young person establishes for themselves (Sewell, Haller, & Portes, 1969). This relates back to the idea that parental and peer relationships can be protective and risk factors for delinquent and criminal behavior. If a young person perceives the expectations of their parents and friends regarding their future to be prosocial in nature, their aspirations for their future may be higher than for those who deem the expectations of them to be lower.

Overall, the research on the relationship between attachments (both parental and peer) and delinquency and optimism and delinquency, respectively, highlight that attachments and optimism both impact delinquency individually, and that attachments may impact optimism. This study will continue to assess these respective relationships, but will also bring all three components (attachments, optimism, and delinquency) together to see if and how parental and peer attachments impact delinquency, while evaluating the mediating role that optimism plays within the relationship. Theoretical models offer evidence that optimism may act as a mediating force between the previously established relationship between attachment and delinquency, though an explicit test has yet to be conducted. As will be discussed next, this relationship will be evaluated through a secondary data analysis implementing a series of multiple regressions.

Hypothetical Model

As a reminder, the research question for this analysis is: Does a young person's optimism toward future prospects mediate the relationship between parental and peer attachments and likelihood of delinquency? The endogenous variable within this analysis is delinquency, with attachment as an exogenous variable and optimism as a mediating variable. Additionally, there are several control variables within this analysis: age, gender, ethnicity, location, and delinquent peer influence (more information on control variables to be discussed within the 'Methods' section). There are three hypotheses that this study will test: (a) Young people with strong attachments will have lower levels of delinquency; (b) Young people with higher levels of optimism about their future will have lower levels of delinquency; and, (c) The relationship between low levels of attachment and delinquency will be attenuated by high levels of optimism. This study will conduct a secondary data analysis of the Pathways to Desistance data to answer the research question and assess the hypotheses at hand (Pathways to Desistance is a longitudinal study of a sample of seriously justice-involved youth that will be discussed in further detail below).[1] The Pathways to Desistance data is publicly available and was accessed via the Inter-university Consortium for Political and Social Research's (ICPSR) website.

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[1] Project was approved by University of Nevada, Las Vegas Institutional Review Board (IRB). See Appendix A

Figure 1. Path Model
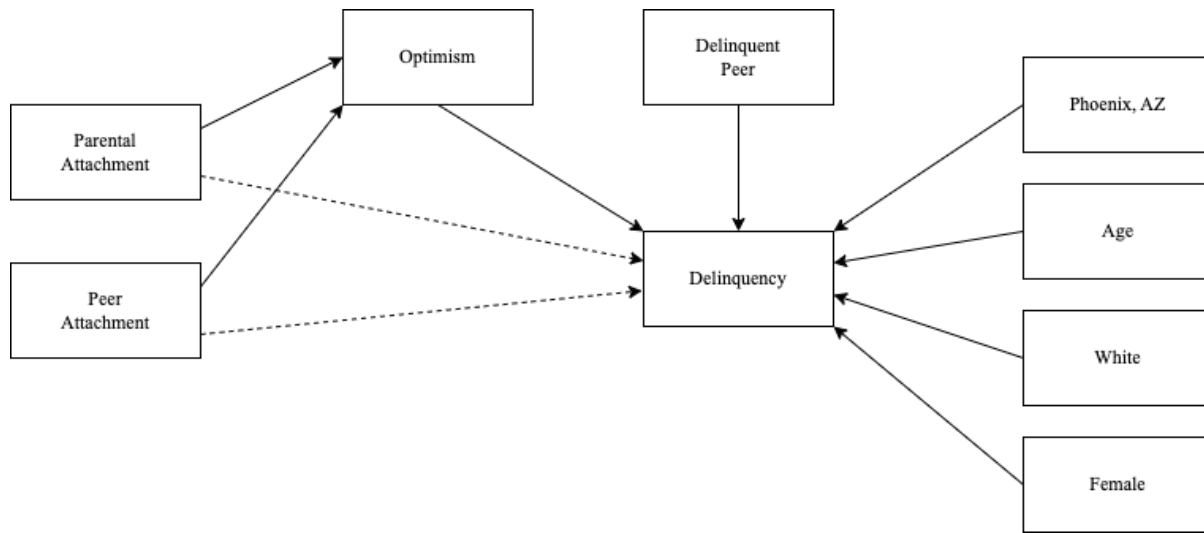
Although the Pathways to Desistance study conducted a total of 11 waves of interviews

and data collection, only two waves will be used here to test the research question and

hypotheses at hand: the Baseline Wave and Wave 5. The Baseline Wave is the first wave of data

collection for Pathways, and Wave 5 is the halfway mark of data collection. This study chose to

use Wave 5 to assess if optimism influences the relationship between attachment and

delinquency because, as the participants of the study age, they answer fewer questions about

their parental relationships, which is one of the exogenous variables for this study. For instance,

for the last two waves of data collection, Wave 10 and Wave 11, no participants in the Pathways

study answered questions about their maternal and paternal warmth. There are a variety of

potential explanations for this finding, one of which may be that as young people turn 18-years-

old, they may move out of their parents' home and no longer have the same types of

relationships with their parents that they did when living in the home. Therefore, the decision to

use Wave 5 as the second wave of data collection here was made in an effort to help control for

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high levels of missingness regarding parental attachment that is present in later waves of data collection.

As will be explained and discussed in further detail below, several analytical tools have been implemented within this study to assess the relationship between optimism, attachment, and delinquency. The analysis at hand began with an assessment of the descriptive statistics for both waves of data collection, followed by an assessment of the Pearson's correlation between parental attachment, peer attachment, optimism, and delinquency, respectively. After running the Pearson's correlation, the Cronbach's alpha was assessed for the relationship between parental attachment and peer attachment at both the Baseline Wave and Wave 5. When it came time to actually assess the relationships at hand, a series of bivariate linear regressions were run, followed by a mediation/path model. The goal of the path model was to identify any direct and indirect influences between parental attachment, peer attachment, optimism, and delinquency.

<center>**Methods**</center>

Data

  The Pathways to Desistance study (hereafter "Pathways")[2] is a longitudinal study that follows the same sample of 1,354 seriously justice-involved youth over the course of seven years, starting in late-2000 and ending in early/mid-2010. Pathways followed young people through adolescence to young adulthood, and involvement in the study was based on young people who were convicted of a felony offense or serious misdemeanor between the ages of 14 and 18. The initial goal of the Pathways study was to inform policy for courts and social workers serving seriously justice-involved youth (National Institute of Justice [NIJ], 2014). Pathways is currently the longest longitudinal study on justice-involved youth to be conducted, and a unique component of the study is the consistent involvement of the 1,354 participants.

  As for the logistics of Pathways, the study took place across two different states within the United States and consisted of a total of 11 waves of interviews and data collection (a baseline wave and 10 follow-up waves that ranged from six-months apart during the first three years to 12 months apart after the three-year mark) (NIJ, 2014). Young people were eligible for involvement in the Pathways sample if they were convicted of an offense in Maricopa County, Arizona or Philadelphia, Pennsylvania. During each wave of interviews, the young participants were asked to report about their academics, substance use, relationships with friends and family, employment, aspirations and expectations for their future, and self-report their delinquent and justice-involved behavior since the previous interview, among other things (additional areas of questioning, as well as the questions asked within the interviews, are listed on the Pathways to Desistance website: https://www.pathwaysstudy.pitt.edu/).

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[2] Find the full Pathways to Desistance study and associated measures at https://www.pathwaysstudy.pitt.edu/

Measures

Delinquency

Each wave of data collection conducted by the Pathways study asks participants to self-report any delinquent and/or criminal behavior that they have participated in since the last wave of interviews was conducted. This means that, depending on the wave, participants will be recalling their behavior from the last six months or the last year. The Pathways study asks participants to self-report on their offending variety. Offense variety scores measure the number of different types of delinquent behavior or crimes that the young person has participated in during the recall period, rather than their frequency (i.e., count) of offending. According to Sweeten (2012), utilizing a variety score measure of offending is a robust way to estimate delinquency, as count variables may over-emphasize minor forms of offending (e.g., status offenses such as running away from home, drinking alcohol, or staying out past curfew to name a few). This can result in young people that participate in a lot of minor offenses looking like they are more serious offenders than they actually are.

The total offending variety proportion measure is a proportion score, with the numerator representing the number of self-reported behaviors the individual has participated in, and the denominator representing the number of self-reported offending questions the individual answered within each wave of data collection. As with a proportion score, the closer the score is to one, the greater the variety of offenses that the individual has participated in. The individuals within the Pathways study are asked about their participation in a variety of offenses, including: property damage and destruction; arson; breaking into establishments with the intention to steal; stealing from a store; buying, receiving, or selling stolen goods; using checks or credit cards illegally; car and motorcycle theft; selling marijuana; selling other illegal drugs; carjacking;

driving while under the influence of drugs or alcohol; prostitution; rape; homicide/murder; shooting someone; shooting at someone; stealing property by force with and without a weapon; physically attacking or beating up someone; being in a fight; being involved with gang activity; and, carrying a gun.[3] In total, the young people within the Pathways study were asked to self-report their participation in delinquent or criminal behavior across 22 types of delinquent and criminal activities. An example of how the proportion score would be calculated for a participant is as follows: a participant answers 18 of the 22 questions in total, and they self-report that they have participated personally in 10 of the delinquent or criminal activities. This means that this individual's proportion score would be 10/18, or 0.56.

Parental Attachment

Within each wave of data collection, the Pathways study asks participants about the state of their family relationships, specifically those with their parents. Although the Pathways study does not explicitly ask a young person about the strength of their attachment with their parents, it does ask 10 questions, respectively, about a young person's relationship with their mother and father (examples of which will be provided below), and creates a composite score to represent maternal and paternal warmth. In order to measure the strength of attachment between a young person and their parents, this study will use the measures of maternal and paternal warmth from the Pathways study. It is important to note that each participant within the study determines the maternal and paternal figure that they will be answering questions about, meaning that not all of the participants will be answering these questions in relation to their biological mother and father, but in relation to someone in their life that they identify as a maternal and paternal figure.

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[3] See Appendix B for the Pathways to Desistance full question list of the measures used within this study.

Maternal and paternal warmth are asked about separately within the Pathways study, however the items for both measures are the same. Before asking participants to measure their parental warmth for their mother and father, they are asked about the specific relationship to the person they will be answering the questions about (i.e., biological parent, adoptive parent, sibling, aunt/uncle, etc.). Both the maternal and paternal warmth measures are composite measures of nine questions that participants are asked to rank on a scale from 1-4 (1 being "Always," and 4 being "Never"). Participants are asked about how their time with their mother and father, respectively, is spent. For example, participants are asked when they spend time with their mother/father, how often did their mother/father: help them do something that was important to them, let them know that their parent cares about them, listen to their point of view, act supportive and understanding towards them, act in a loving and affectionate way towards them, laugh with them about something that was funny, let them know that their parent appreciates them, tell them their parent loves them, and understands the way they feel. With maternal and paternal warmth being composite scores, participants need to have answered at least seven of the questions in order for a mean score for maternal and paternal warmth, respectively, to be calculated.

Unfortunately, there are substantively high levels of missingness within the data regarding participants' responses to questions about their parents, especially within the later waves of data collection. The reason for this missing data may be attributed to the fact that, as young people reach the age of majority and are no longer required to live with their parents/guardians, they may move out of their primary family household. Additionally, there is generally high missingness on paternal warmth measures as compared to maternal warmth measures. In an effort to control for the missingness within the data, this study combined the

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individual variables of maternal warmth and paternal warmth to create a new variable entitled

"parental warmth." This new variable was created by taking the average score between maternal

and paternal warmth in a wave for participants who answered questions about both parents. For

participants who only answered these questions in regard to one parent, the reported maternal or

paternal warmth measure is used. The result is a combined variable of parental warmth. This new

variable of parental warmth does still have a higher level of missingness than is desirable, but

this is due to some participants across the two waves of data collection included here, and the 11

waves of data collection in general, choosing not to answer some or all of the questions about

their maternal and paternal warmth in general.

Peer Attachment

The Pathways study measures the friendships of the participants in a variety of ways, one

in particular being the quality of friendship. In order to understand how friendship can impact

optimism and justice involvement, this study will utilize the Pathways measure of friendship

quality to gauge this relationship.

The friendship quality measure is a composite measure of 10 questions that participants

are asked to rank on a scale of 1-4 (1 being "Not at all," 4 being "Very much"). To understand

the quality of participants' friendships, participants are asked: how much they can count on a

friend to help them with problems, how much they could count on a friend for help if a family

member died, how close they think they will be with their friend in 10 years, how much they

would miss their friend if they didn't talk to or see each other for a month, how sure they are that

their friend would want to do something if they went out together, how much they can depend on

their friend, how much they can count on their friend to listen to them when they are angry, how

much they can count on their friend to take their mind off of problems when they are stressed,

how much their friend has tried to stop them from doing something that was wrong or illegal, and how much their friend has tried to influence them into doing something others would think is wrong. With friendship quality being a composite score, participants need to have answered at least seven of the questions in order for a mean score on friendship quality to be calculated.

Optimism

As previously mentioned, the goal of this study is to assess the impact that a young person's attachments to their parents and friends, in relation to their self-perceived level of optimism regarding their future, can have on their persistence or desistance with crime. The Pathways study asks participants within each wave of interviews about their respective aspirations and expectations for the success of their future regarding work, family, and the law. However, based on previous research, the study at hand will use the measure of a young person's aspirations for their future to measure their level of optimism. Not only is there research to support the reasoning behind this decision, but there is also the definition of the two concepts from Mahler and colleagues (2017) to be considered. Aspirations are important to someone; these are goals that are important for them to achieve, and no one outside of the individual can determine what an important goal is. However, expectations begin to bring in the reality of one's life – the labels they have been given and society's view of what they are capable of based on their experiences and circumstances. Expectations refer to the likelihood of achieving an aspiration. This study will assume, based on previous literature, that a young person's aspirations for their future will impact the choices they make regarding their behavior more than expectations because they are attempting to achieve goals that they have established for themselves.

The aspirations measure is a composite measure of seven questions that participants are asked to rank on a scale from 1-5 (1 being "not important at all," 5 being "very important"). Participants are asked how important it is for them to: have a good job or career, graduate from college, earn a good living, provide a good home for their family, have a good marriage, have a good relationship with their children, and stay out of trouble with the law. With aspirations being a composite score, participants need to have answered at least five of the questions in order for a mean score for aspirations to be calculated.

Control Variables

A total of five control variables were included within this analysis.

Age. During the initial wave of study, the Baseline Wave, Pathways gathered each participant's date of birth to calculate their age. Each participant's date of birth was calculated against that start of data collection for the given wave to determine the age of participants. This is also how the age of each participant was calculated throughout the 11 waves of data collection: the date of the start of the questionnaire for each respective wave was subtracted by the date of birth collected during the Baseline Wave. The date of birth for each participant is not included within the publicly available data used for this study, so this study used the age of each participant in years reported within the study for the two waves of data reviewed here. Age was included as a control variable for this study because prior research on the age-crime curve has acknowledged that, as young people age into adolescence, early adulthood, and beyond, their participation in criminal activity typically decreases (Farrington, 1986).

Gender. Gender was used as a dichotomous variable within the Pathways study, asking participants to identify as "Male" or "Female." All participants shared their gender identity within the two different waves of data collection used here; however, if a participant missed a

wave of data collection (specifically for Wave 5), their gender identity was not assumed and therefore left blank. In the initial data collection, Pathways coded the variable of gender as Male (1) and Female (2); however, these qualities were recoded within the present study with Male (0) and Female (1). Gender was included as a control variable within this study as research has shown that males participate in delinquent behavior at higher rates than females do, and males are more likely to be connected to delinquent peers (Piquero, Giver, MacDonald, & Piquero, 2005).

Ethnicity. In the initial data collection at the Baseline Wave, participants of the Pathways study were able to self-identify their ethnicity within six allocated ethnicity categories: White, Black, Asian, Native American, Hispanic, and Other. However, after the Baseline Wave, the variable of ethnicity was recoded with four options for participants: White, Black, Hispanic, and Other. All participants self-identified their ethnic background, and if they were not present for follow-up interviews, their previously identified ethnicity was listed for the wave of data collection that was missed. The Pathways study coded the variable of ethnicity as White (1), Black (2), Hispanic (3), and Other (4). Ethnicity was recoded in this way to ensure the data remained de-identifiable. For the purpose of this study, however, the variable of ethnicity was recoded as a dichotomous variable, with the values of Non-White (0) and White (1). Ethnicity was included as a control variable within this study as prior research has found differences among ethnic groups in regard to delinquency, and, although not the focus of this study, differences in parenting practices and peer influence among different ethnic groups (Deutsch, Crockett, Wolff, &Russell, 2012).

Site. Similar to the variable of gender, the variable of site was a dichotomous variable within the Pathways study, reflecting the location of each participant and where their felony or

serious misdemeanor conviction took place. The two values included within site were Philadelphia (1) and Phoenix (2). For the purpose of this study, the values were recoded to reflect Philadelphia (0) and Phoenix (1). Site was included as a control variable within this study because prior research has established a relationship between neighborhood collective efficacy and the influence of delinquent peers (Tompsett, Veits, & Amrhein, 2016). Collective efficacy refers to a community or neighborhood's ability to exert informal social control over others occupying that space; however, it has also been argued that collective efficacy can be transmitted by one's peers, and in this case, delinquent peers (Tompsett et al., 2016).

Delinquent Peer Influence. As previously mentioned, there is a very strong relationship between a young person having delinquent peers and becoming justice-involved themselves (Howell, 2003; McGloin & Thomas, 2019). The delinquent peer influence measure is a composite measure of seven questions that participants are asked to answer with a number count of how many of their friends have suggested that they participate in a variety of behaviors and actions. Specifically, participants are asked how many of their friends have: suggested they go out drinking, claimed they have to be drunk to have a good time, suggested they have to be high on drugs to have a good time, suggested they sell drugs, suggested they steal, suggested they hit or beat someone up, and suggested they carry a weapon. With peer delinquency-antisocial influence being a composite score, participants need to have answered at least five questions in order for a mean score on antisocial influence to be calculated.

Plan of Analysis

Bivariate Linear Regression

In order to conduct the analysis for this study, several analytical tools will be used to estimate the relationship between the different variables included. Ordinary least squares (OLS) regression is used to examine bivariate relationships between the exogenous and endogenous variables, and the exogenous and mediating variables. OLS regression is appropriate for use with continuous variables. The measure employed here is a semi-continuous variable of offense variety for participants, which has been examined using OLS regression in past studies. A bivariate linear regression allows for the evaluation of a relationship between one endogenous variable and one exogenous variable. For this study, two sets of bivariate OLS regressions are estimated: the first will assess the relationship between the endogenous variable of delinquency and the respective exogenous variables of parental attachment, peer attachment, and optimism. The second will assess the relationship between the endogenous variable of optimism and the respective exogenous variables of parental attachment and peer attachment. To examine the relationship between these variables, a series of bivariate linear regressions will be estimated, a total of five for the baseline wave of data collection and the same five regressions for Wave 5 (the middle wave of the Pathways study). A series of linear regressions will be implemented within each of the two waves of data collection to understand the effect of the different variables on each other before estimating a larger scale mediation model (discussed in further detail below).

Mediation Model (Path Model)

After running a series of bivariate linear regressions at both the Baseline Wave and Wave 5, a mediation model, via a path model, will be estimated. A mediation model allows for the

understanding of how a mediating variable impacts the relationship between an exogenous and endogenous variable. For this analysis, the effect of optimism as a mediating variable will be estimated against the relationships between parental attachment and delinquency and peer attachment and delinquency. A path model analysis, specifically, is a structured set of linear regressions that includes restrictions not included within a simple linear regression (Columbia, n.d.). The idea behind the estimation of a path model is to describe a pattern of relationships among variables included within the linear regressions in the model (Columbia, n.d.). In particular, mediating models estimate both direct relationships between exogenous and endogenous variables, as well as indirect effects that exogenous variables exert on the endogenous variable through a mediating variable. Additionally, the influence of a host of relevant control variables (age, gender, ethnicity, site, and delinquent peer influence) will be explored within these relationships.

Results

Descriptive Statistics

As previously mentioned, the Pathways to Desistance Study conducted a total of 11 waves of data collection. However, for this study, only two waves will be used: the initial wave (Baseline Wave) and Wave 5. At the beginning of the study, for the Baseline Wave of data collection, there were a total of 1,354 participants included in the study. Although the goal for the entire study was to interview the same 1,354 participants for each wave of data collection, only 1,234 individuals participated in the interviews conducted for the study during Wave 5. All participants for both waves of the Pathways study used here were asked the same questions pertaining to the measures listed in the table below (and described within the 'Methods' section). Although there was a total of 1,354 participants in the Baseline Wave and 1,234 participants in Wave 5, respectively, not all participants answered all of the questions they were asked within each wave.

Table 1 displays the descriptive statistics of the Baseline and Wave 5 participants. Of the Baseline Wave sample, 86% (1,170) of participants identified as male and 14% (184) identified as female. The descriptive values of ethnicity show that 80% (1,080) of the sample identified as Non-White, and 20% (274) of the sample identified as White. Finally, 52% of participants (700) were located in Philadelphia, and 48% of participants (654) were located in Phoenix.

Additionally, when reviewing the descriptive statistics for the Baseline Wave, one can see that the mean, or average, rate of self-reported delinquent offending was 0.33 on a scale of 0 – 1 (S.D. = 0.21). This suggests that, on average, juveniles in this sample report participating in approximately one-third of the possible offense types reported. The mean response for parental

Table 1: Sample Descriptive Statistics

	Baseline N = 1,354				Wave 5 N = 1,234			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Dependent Variable								
Delinquency (Offending Variety)	0.33	0.21	0	0.95	0.05	0.10	0	0.77
Attachment								
Parental Attachment	3.06	0.69	1	4	3.00	0.76	1	4
Peer Attachment	3.39	0.45	1.30	4	3.34	0.50	1.40	4
Optimism	4.43	0.57	1.17	5	4.49	0.56	1	5
Control Variables								
Delinquent Peer Influence	1.76	0.85	1	5	1.41	0.67	1	5
Age	16.04	1.14	14	19	18.49	1.15	16	22
Gender								
Male	0.86	--	0	1	0.78	--	0	1
Female	0.14	--	0	1	0.13	--	0	1
Ethnicity								
Non-White	0.80	--	0	1	0.80	--	0	1
White	0.20	--	0	1	0.20	--	0	1
Site								
Philadelphia	0.52	--	0	1	0.52	--	0	1
Phoenix	0.48	--	0	1	0.48	--	0	1

attachment was 3.06 on a scale of 1 – 4 (S.D. = 0.69), suggesting generally high levels of

parental attachment among this sample. The mean response for peer attachment was 3.39 on a

scale of 1 – 4 (S.D. = 0.45), signifying a generally high level of peer attachment for this sample.

The mean response for optimism was 4.43 on a scale of 1 – 5 (S.D. = 0.57), highlighting that

participants within this sample have fairly high levels of optimism regarding their future. The

mean response for delinquent peer influence was 1.76 on a scale of 1 – 5 (S.D. = 0.85), which

suggests that participants generally report few peers encouraging a respondent's own delinquent

acts. Finally, the mean age of participants for this wave was 16.04 years old (S.D. = 1.14).

Looking at the descriptive statistics for the scale variables of Wave 5 of data collection

(the right side of the table), 78% (1,061) of participants identified as male and 13% (173)

identified as female. The descriptive values of ethnicity show that 80% (1,080) of the sample

identified as Non-White, and 20% (274) of the sample identified as White. Finally, 52% of

participants (700) were located in Philadelphia, and 48% of participants (654) were located in

Phoenix. The variables of ethnicity and site are consistent across both sets of data because these

attributes did not change for participants across the two samples. The variable of gender, on the

other hand, is slightly different across the two samples as a result of attrition, and potentially

even a change in gender identity for participants.

For the Wave 5 sample, the average rate of self-reported delinquent offending was 0.05

on a scale of 0 – 1 (S.D. = 0.10). This suggests that very few participants in Wave 5 self-reported

as participating in any possible offense types reported. The mean response for parental

attachment was 3.00 on a scale of 1 – 4 (S.D. = 0.76), showcasing that participants reported

fairly high levels of attachment to their parents. The mean response for peer attachment was 3.34

on a scale of 1 – 4 (S.D. = 0.50), demonstrating generally high levels of peer attachment for the

participants. The mean response for optimism was 4.49 on a scale of 1 – 5 (S.D. = 0.56), underscoring that participants from this sample are highly optimistic about their future prospects. The mean response for delinquent peer influence was 1.41 on a scale of 1 – 5 (S.D. = 0.67), which suggests that participants in this sample believe they are not generally influenced by their delinquent peers. Finally, the mean age of participants for this wave was 18.49 years old (S.D. = 1.15).

Briefly reviewing the descriptive statistics for both waves of data collection, a few conclusions can be drawn. One major conclusion that can be drawn is that delinquent offending dropped to an almost non-existent level from the Baseline Wave to Wave 5. This means that individuals in Wave 5 were not participating in delinquent and criminal offending as frequently as they did during the Baseline Wave. This finding corroborates prior work and theory which suggests that individuals age out of crime over time (Farrington, 1986). Additionally, levels of parental attachment, peer attachment, and optimism remained consistently high across both waves of data analyzed for this study. Finally, individuals within the waves consistently reported low levels of delinquent peer influence across both waves of data collection.

Model Diagnostics

A series of diagnostics were conducted on both the Baseline Wave and Wave 5 variables, including a series of Pearson's correlations and Cronbach's alphas. Pearson's correlations explain whether two variables have a linear relationship. This means that a Pearson's correlation assesses if a change in one variable is related to change in another variable. Cronbach's alphas, on the other hand, describe whether multiple variables display internal reliability, as it measures the consistency of a variable and if it is connected to any other variables included within a study. These specific methods of estimation were implemented to better inform the structure of the path

model used for this analysis, and to test for multicollinearity between variables. Multicollinearity can pose issues within a study because, when two separate variables measure the same thing, and therefore have high levels of multicollinearity, the reliability of coefficient estimates may show a false null relationship because neither variable may independently predict the endogenous variable.

In looking at the Baseline Wave, the Pearson's r correlation values ranged from 0.005 to 0.227, suggesting no strong multicollinearity between variables at the Baseline Wave. The weakest correlation between age and optimism ($r = 0.005$) suggests a weak, nearly non-existent, positive association between age and optimism. The strongest correlation between parental attachment and optimism ($r = 0.227, p < 0.01$) poses a weak, but significant, positive relationship between parental attachment and optimism. Though relationships are weak, all are estimated in the expected direction based on the literature outlined above. Correlation values at the Baseline Wave do not suggest issues of multicollinearity for the selected model.

Table 2a. Pearson's Correlations Baseline Wave

	Delinquency	Parental Attachment	Peer Attachment	Optimism
Delinquency	1	--	--	--
Parental Attachment	-0.138**	1	--	--
Peer Attachment	-0.048	0.146**	1	--
Optimism	-0.200**	0.227**	0.172**	1
Age	0.177**	-0.039	0.026	0.005

** Correlation is significant at the 0.01 level

Transitioning to the diagnostic interpretation for Wave 5, the Pearson's r correlation values ranged from 0.002 to 0.292. Similar to the Baseline Wave, the weakest correlation is between age and optimism ($r = 0.002$), suggesting a weak, nearly non-existent positive association between age and optimism. Unlike the Baseline Wave, the strongest correlation for Wave 5 is between parental attachment and peer attachment ($r = 0.292$, $p < 0.01$), proposing a weak, but significant, positive relationship between parental attachment and peer attachment. Reflecting on the research question and hypotheses for this analysis, it is surprising that parental attachment and peer attachment are not more strongly correlated with optimism (parental attachment and optimism: Baseline Wave: $r = 0.227$, $p < 0.01$; Wave 5: $r = 0.208$, $p < 0.01$; peer attachment and optimism: Baseline Wave: $r = 0.172$, $p < 0.01$; Wave 5: $r = 0.141$, $p < 0.01$). It is also surprising to see that for both the Baseline Wave and Wave 5, there is not a stronger correlation between the variables of age and optimism, and that the correlation between these two variables is the weakest correlation across both waves. This finding is interesting when considering the research on the age-crime curve and young people "aging out" of their participation in delinquent and criminal behavior because of the people and activities in their life as they age (Farrington, 1986). One may expect that, based on research on the age-crime curve, as one ages, their optimism for future prospects increases; however, this finding may suggest that one's optimism for their future is not a reason for why one does not participate in delinquent or criminal activity.

Table 2b. Pearson's Correlations Wave 5

	Delinquency	Parental Attachment	Peer Attachment	Optimism
Delinquency	1	--	--	--
Parental Attachment	-0.117**	1	--	--
Peer Attachment	-0.060*	0.292**	1	--
Optimism	-0.167**	0.208**	0.141**	1
Age	-0.037	0.028	-0.038	0.002

** Correlation is significant at the 0.01 level

* Correlation is significant at the 0.05 level

As previously mentioned, a Cronbach's alpha was utilized within both the Baseline Wave and Wave 5, to estimate the relationship between parental attachment and peer attachment for multicollinearity. A Cronbach's alpha is conducted when there is concern that two separate variables may be tapping into the same construct, therefore impacting the ability to accurately interpret the relationships and associations within a model. For this study, parental attachment and peer attachment both tap into the component of attachment, and it was important to ensure that they did not tap into the same type of attachment. For the Baseline Wave, the Cronbach's alpha was 0.236, and for Wave 5 it was 0.425, suggesting that these two variables assess attachment in different ways. This means that one of these variables does not need to be removed, nor do both variables need to be combined into one variable.

Bivariate Linear Regressions

Before conducting the path model analyses for this study, bivariate linear regressions were conducted across the four main variables of the study. The intention behind utilizing bivariate linear regression in conjunction with the path model is to better explain the relationships between each of the variables, and how optimism may mediate the impact of

parental and peer attachments on delinquency. As such, a total of five linear regressions were estimated for both waves of data included in this study.

To begin, the interpretations for the Baseline Wave regressions are discussed first. Of the five linear regressions conducted, one did not produce a statistically significant relationship and four did produce statistically significant relationships. The regression that produced a statistically non-significant relationship looked at the endogenous variable of delinquency and the exogenous variable of peer attachment ($F_{(1,1300)} = 3.025$, p = n.s., $R^2 = 0.002$). The coefficient of peer attachment yielded a p-value of 0.082, indicating a non-significant relationship with the endogenous variable of delinquency. The remaining regressions did produce statistically significant relationships.

The first significant regression looked at the endogenous variable of delinquency and the exogenous variable of parental attachment ($F_{(1,1328)} = 25.760$, $p < 0.01$, $R^2 = 0.019$). Results suggest that a one unit increase in parental attachment corresponds to a 0.042 decrease in offending variety ($p < 0.01$). This suggests a small, but significant, negative relationship between parental attachment and delinquency, which was expected. The second significant regression looked at the endogenous variable of delinquency and the exogenous variable of optimism ($F_{(1, 1342)} = 56.075$, $p < 0.01$, $R^2 = 0.040$). Results propose that a one unit increase in optimism

Table 3. Bivariate Linear Regressions of "Delinquency" and "Optimism"

		Delinquency			Optimism		
		Coeff	SE	Hypotheses Confirmed	Coeff	SE	Hypotheses Confirmed
Baseline Wave	Parental Attachment	**-0.042****	0.008	√	**0.186****	0.022	√
	Intercept	0.454	0.026		3.863	0.069	
	Peer Attachment	**-0.022**	0.013	√	**0.215****	0.034	√
	Intercept	0.403	0.044		3.703	0.117	
	Optimism	**-0.074****	0.010	√	--	--	--
	Intercept	0.655	0.044		--	--	--
Wave 5	Parental Attachment	**-0.015****	0.004	√	**0.151****	0.022	√
	Intercept	0.093	0.012		4.034	0.069	
	Peer Attachment	**-0.012**	0.006	√	**0.156****	0.034	√
	Intercept	0.089	0.020		3.987	0.114	
	Optimism	**-0.028****	0.005	√	--	--	--
	Intercept	0.176	0.022		--	--	--

**$p < 0.01$

corresponds to a 0.074 decrease in offending variety ($p < 0.01$). This implies a weak but significant negative relationship between optimism and offending variety, which was the expected relationship. The third significant regression looked at the endogenous variable of optimism and the exogenous variable of parental attachment ($F (1, 1327) = 72.001, p < 0.01, R^2 = 0.051$). Findings suggest that a one unit increase in parental attachment corresponds with a 0.186 increase in optimism ($p < 0.01$). This strong and significant positive relationship was expected. Finally, the fourth significant regression looked at the endogenous variable of optimism and the exogenous variable of peer attachment ($F (1, 1295) = 39.711, p < 0.01, R^2 = 0.030$). Results suggest that a one unit increase in peer attachment relates to a 0.215 increase in optimism ($p < 0.01$). This is a strong and significant positive relationship that was expected.

Next, the interpretations for Wave 5 will be discussed. The same five linear regressions that were conducted at the Baseline Wave were also conducted for Wave 5. Of the five linear regressions, one did not produce a statistically significant relationship and four did, which is consistent with the analyses for the Baseline Wave. The regression that produced a statistically non-significant relationship looked at the endogenous variable of delinquency and the exogenous variable of peer attachment ($F (1, 1063) = 3.852, p = $ n.s., $R^2 = 0.004$). The coefficient of peer attachment yielded a p-value of 0.050, indicating a non-significant relationship with the endogenous variable of delinquency. The remaining regressions did produce statistically significant relationships, all at the 0.01 significance level.

The first significant regression looked at the endogenous variable of delinquency and the exogenous variable of parental attachment ($F (1, 1004) = 13.956, p < 0.01, R^2 = 0.014$). Results suggest that a one unit increase in parental attachment relates to a 0.015 decrease in offending variety ($p < 0.01$). This finding was expected and implies a small but significant negative

relationship between parental attachment and offending variety. The second significant regression looked at the endogenous variable of delinquency and the exogenous variable of optimism ($F_{(1, 1227)} = 35.082$, $p < 0.01$, $R^2 = 0.028$). Findings suggest that a one unit increase in optimism corresponds to a 0.028 decrease in offending variety ($p < 0.01$). This suggests a small but significant negative relationship between optimism and offending variety in the expected direction. The third significant regression looked at the endogenous variable of optimism and the exogenous variable of parental attachment ($F_{(1, 1002)} = 45.218$, $p < 0.01$, $R^2 = 0.043$). Results propose that a one unit increase in parental attachment corresponds to a 0.151 increase in optimism ($p < 0.01$). This expected finding suggests a strong and significant positive relationship between parental attachment and optimism. Finally, the fourth significant regression looked at the endogenous variable of optimism and the exogenous variable of peer attachment ($F_{(1, 1061)} = 21.379$, $p < 0.01$, $R^2 = 0.020$). Results suggest that a one unit increase in peer attachment relates to a 0.156 increase in optimism ($p < 0.01$). This suggests a strong and significant positive relationship between peer attachment and optimism in the expected direction.

Briefly addressing the expectations within the hypotheses and research question for this study, the bivariate linear regressions conducted at both the Baseline Wave and Wave 5 have largely confirmed the hypotheses with one exception. For instance, when parental attachment and optimism increase by one-unit, delinquent offending variety decreases. Similarly, when parental and peer attachment increase by one unit, optimism increases as well. The only unexpected finding is that the relationship between peer attachment and delinquent offending variety does not produce a statistically significant relationship in either wave of data collection.

Path Model

As described earlier, a path model analysis allows for a series of linear regressions to be considered within a larger, structured model (see Figure 2 and Figure 3, and Appendix C for Table C1 for a full statistical presentation). The goal of the path model for this analysis is to assess how the mediating variable of optimism impacts the relationship of parental attachment and peer attachment on delinquency. The path model estimates both the direct relationships between parental and peer attachment and delinquency, and the indirect effect of parental and peer attachment on delinquency through the mediating variable of optimism. The same path model was utilized for both the Baseline Wave and Wave 5, and the results of these analyses will be discussed below.

Figure 2. Path Model Results for Baseline Wave
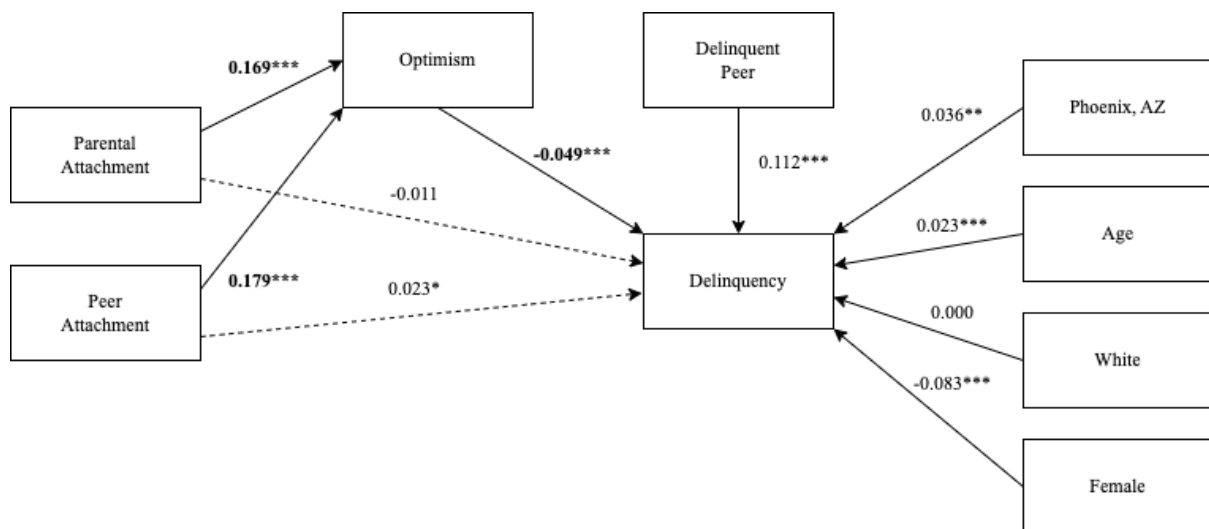
Figure 3. Path Model Results for Wave 5
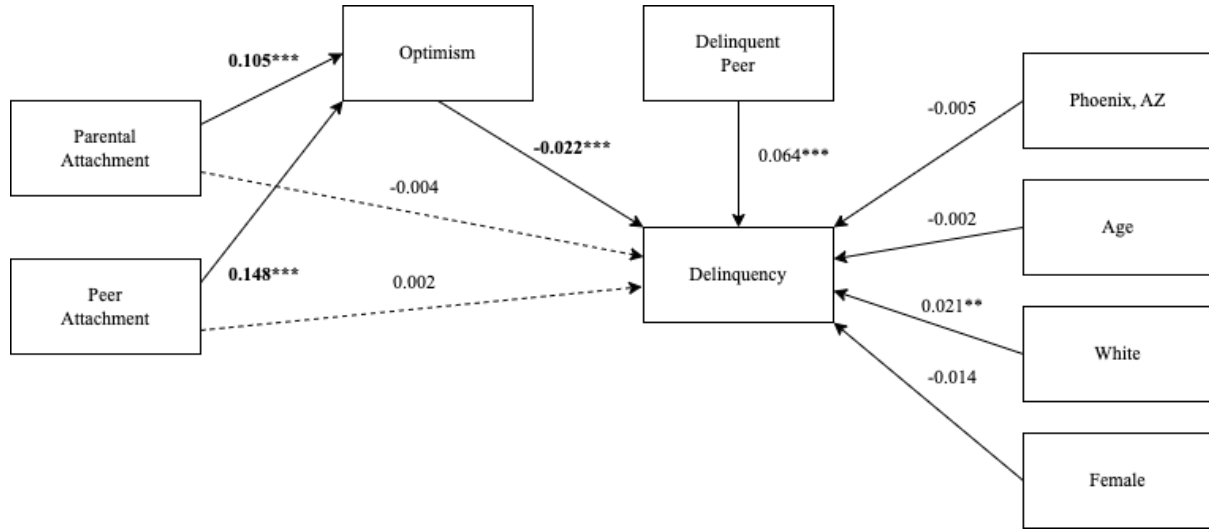
Looking first at the Baseline Wave, both regressions estimating optimism as an endogenous variable and parental and peer attachment as exogenous variables are statistically significant (see Table C1 in Appendix C for full results). Specifically, parental attachment is a positive predictor of optimism ($b = 0.169, p < 0.001$) and peer attachment is also a positive predictor of optimism ($b = 0.179, p < 0.001$). When looking at offending variety of delinquency as an endogenous variable, not all of the relationships were found to be significant. For instance, parental attachment negatively predicts offending variety of delinquency but not at a statistically significant level ($b = -0.011, p =$ n.s.). However, peer attachment positively predicts delinquency ($b = 0.023, p < 0.05$), and optimism negatively predicts delinquency ($b = -0.049, p < 0.001$).

Transitioning to a review of the control variables, ethnicity does not predict delinquency at a statistically significant level ($b = 0.000, p =$ n.s.). However, the remaining control variables do predict offending variety of delinquency at statistically significant levels. For example, site ($b = 0.036, p < 0.01$), age ($b = 0.023, p < 0.001$) and delinquent peer influence ($b = 0.112, p <$

0.001) all positively predict delinquency; whereas, gender predicts that females participate in fewer types of delinquency than male participants (b = -0.083, p < 0.001).

Now transitioning to the results of the path model for Wave 5, similar to the Baseline Wave, both regressions on optimism as an endogenous variable were statistically significant. Parental attachment (b = 0.105, p < 0.001) and peer attachment (b = 0.148, p < 0.001) both positively predicted optimism. Turning towards offending variety of delinquency as the endogenous variable, far fewer exogenous and control variables predicted statistically significant findings. For example, parental attachment negatively predicts offending variety of delinquency but not at a statistically significant level (b = -0.004, p = n.s.). Additionally, peer attachment positively predicted offending variety of delinquency, but not at a significant level (b = 0.002, p = n.s.). However, optimism negatively predicts offending variety of delinquency at a statistically significant level (b = -0.022, p < 0.001). Most of the control variables negatively predicted the offending variety of delinquency but did not at a level of statistical significance: site (b = -0.005, p = n.s.), age (b = -0.002, p = n.s.), and gender (b = -0.014, p = n.s.). There are, however, a handful of statistically significant predictions among the control variables on delinquency: ethnicity positively predicts that participants that identify as non-White will engage in a wider variety of offending in regard to delinquency than participants that identify as White (b = 0.021, p < 0.01) and delinquent peer influence positively predicts offending variety of delinquency (b = 0.064, p < 0.001).

There are several unanticipated findings from the path models of the Baseline Wave and Wave 5 given the research question and hypotheses of this study. For example, parental attachment did not negatively predict delinquency at a statistically significant level for either wave. Similarly, peer attachment positively predicted delinquency at the Baseline Wave, which

contradicts the first hypothesis for this study. One expected, and consistent, finding across both waves, however, was that optimism negatively predicts delinquency. These findings, along with a more thorough description of the findings from the path models in relation to the research question studied here, will be discussed in more detail within the 'Discussion.'

Discussion

It is important to study juvenile delinquency because of the lasting impacts that becoming justice-involved can have on an individual's life. Although participating in delinquent acts does not guarantee that an individual will become justice-involved during adulthood (Farrington, 1986), there is evidence to show that some people will (Tracy et al., 1990). The results of persistent delinquency and justice involvement can impact an individual's education and job opportunities (Miller, 2019), which can influence the overall trajectory of their life. This study examines how attachment and optimism may act as protective factors against delinquent involvement among seriously justice-involved youth, and attempts to propose how policy and future research can support delinquency- and justice-involved young people in desistance.

The goal of this study was to answer the question: Does a young person's optimism toward future prospects mediate the relationship between parental and peer attachments and likelihood of delinquency? Using guidance from Social Bond Theory (Hirschi, 1969), several hypotheses were proposed and tested: (a) Young people with strong attachments will have lower levels of delinquency; (b) Young people with higher levels of optimism about their future will have lower levels of delinquency; and, (c) The relationship between low levels of attachment and delinquency will be attenuated by high levels of optimism. To examine these hypotheses, bivariate OLS regression models and mediating path models were estimated using a sample of seriously justice-involved juveniles. Several important findings emerge and are described in turn: (a) peer attachment directly influences delinquency; (b) optimism directly influences delinquency; (c) attachment, both parental and peer, directly influence optimism; and (d) attachment indirectly influences delinquency with optimism as a mediating variable.

To begin, the findings of this study only halfway supported the first hypothesis, which states that young people with strong attachments will have lower levels of delinquency. Specifically, the findings support that peer attachment can directly influence delinquency, but parental attachment does not when controlling for other factors. Looking first at parental attachment, the bivariate linear regressions found, across both waves of data, that parental attachment reduces delinquency. Similarly, within the mediation model, parental attachment negatively predicts delinquency, but not at a significant level. Although the directionality of the relationship is expected (as parental attachment increases, delinquency decreases), this study expected the relationship to be stronger. For example, Hirschi (1969) emphasized that parental attachments were the most important for a young person to desist from delinquent behavior, and Nelson and Rubin (1997) in their analysis of John Bowlby's work on attachment, proposed that parental attachment would also strongly impact a young person's participation in delinquent acts. As such, although this study does find the expected directionality of the relationship between parental attachment and delinquency, it contradicts the expectation of this study for it to be the strongest relationship. One potential reason for this finding could be related to the age of participants included within the Pathways study, and what this could mean for the relationships that they are actively maintaining. Within the Baseline Wave, participants ranged in age from 14 to 19; and, within Wave 5, participants were between the ages of 16 and 22. Research has shown that as youth enter their teen years and early adulthood, they may start to hold their peer relationships to a higher level of importance than their relationships with their parents (Hindelang, 1973; Sampson & Laub, 2003). Although it is just a speculation, this may be one reason why the relationship between parental attachment and delinquency is not as significant as expected for this study.

Still focusing on the first hypothesis proposed for this study regarding attachment and delinquency, this study sought to support the limited research that suggests that prosocial peer attachment can support with desistance in delinquent and criminal behavior (Haynie & Osgood, 2005; Walters 2019). However, the findings of this study do not support this expectation. Similar to the relationship between parental attachment and delinquency, within the bivariate linear regressions conducted at both waves of data included here, peer attachment did reduce delinquency in the expected direction, but not at significant level. When transitioning to look at the mediation model results for the relationship between peer attachment and delinquency, the findings were unexpected. For both the Baseline Wave and Wave 5, the mediation model found that peer attachment positively predicted delinquency. This finding is unexpected because, there is prior research to support that prosocial peer relationships can increase desistance (Haynie & Osgood, 2005; Walters, 2019).

This is an interesting finding because it also contradicts what one may assume to be true: the more prosocial and positive relationships a young person has, the less likely they are to participate in delinquent or criminal activity. One reason for this finding could be that young people participating in delinquent activity maintain peer relationships with others who participate in delinquent activity (McGloin & Thomas, 2019), and do not have relationships with peers that are not actively participating in delinquent or criminal behavior. Another potential reason for this finding could have to do with how prosocial peer attachments impact a young person. For example, a prosocial peer relationship may help improve things like self-image or self-esteem, but may not help in encouraging prosocial behavior. However, when looking at this relationship through a theoretical lens of social bond theory, this finding does support Hirschi's (1969) theory in that he states that parental attachments are the most important, and findings from this study

support the idea that parental attachment is more influential on reduction in delinquent behavior than peer attachment.

Next, an assessment of the second hypothesis will be conducted, which states that young people with higher levels of optimism about their future will have lower levels of delinquency. This hypothesis was highly supported across both waves of data collection and the bivariate linear regressions and mediation model. Across both waves of data collection, the bivariate linear regressions showed that optimism did significantly decrease one's offending variety. Additionally, within the mediation model, optimism negatively predicted delinquency at a significant level. As previously mentioned, the finding that optimism decreased offending variety was expected based on recent research. For example, previous studies have shown that individuals that have high levels of aspirations for their future (which is how optimism is measured within this study), will have lower levels of delinquency (Mahler et al., 2017) and better control over their antisocial behavior (Cuevas et al., 2017). As such, the hypothesis that young people with high levels of optimism will have lower levels of delinquency was supported by this study. Taking this a step further, the importance behind this finding is what can be done with it through policy and programming. Specifically, implementing aspects of programming for at-risk or justice-involved youth that explain and emphasize optimism for future prospects, and encourage young people to think about their future in optimistic ways, could result in a decrease in delinquent and criminal behavior. Although this may require an investment of time and money to train people that can implement this type of programming or service effectively, it has the potential to result in money saved from the costs of crime, court fees, and detention.

Finally, the last hypothesis for this study suggested that the relationship between low levels of peer and parental attachment will be attenuated by high levels of optimism. The

findings for this study produce support for this hypothesis. To really understand this relationship, one first needs to look at how attachment and optimism influence each other, and this study finds strong support that attachment, both parental and peer, directly influences levels of optimism. When looking at the bivariate linear regressions, across both waves of data, parental attachment and peer attachment both positively influence optimism directly. Further, within the mediation model, optimism negatively predicted offending variety of delinquency. These findings regarding the direct influence of parental and peer attachment on optimism were expected, and probably the most robust findings in this study. This was a finding that was expected, but not one that had been clearly defined within theory and prior literature. For example, Sewell and colleagues (1969) theory of status attainment does propose that parental and peer attachment can affect the aspirations that a young person sets for themselves via the expectations a young person feels from these attachments. The findings of this study support this component of Sewell and colleagues' theory of status attainment, and the first piece of the third hypothesis.

Now, transitioning into the findings for the entire third hypothesis. As previously mentioned, parental attachment did have a negative relationship with delinquency on its own; however, when optimism was included as a mediating variable, the negative relationship increased, resulting in a larger negative impact on delinquency. This is even more apparent when considering that peer attachment did not predict delinquency in the expected direction when looking at the relationship between these two pieces on their own; however, when optimism was observed as a mediating variable between parental and peer attachment and delinquency, there was a negative relationship resulting in a decrease in the offending variety of delinquency. Therefore, support for hypothesis three was found within this study. Prior literature and theory support this finding as well.

When taking a piecemeal approach, one can clearly see why this hypothesis was proposed in the first place. As previously mentioned, theory and prior literature support that parental attachment can influence delinquency (Hirschi, 1969; Kotlaja, 2020; Nelson & Rubin, 1997). Additionally, recent studies suggest that prosocial peer attachment can help with young people desisting from delinquent behavior (Haynie & Osgood, 2005; Walters, 2019). Adding in the mediating variable of optimism was where the biggest finding was expected to occur and did occur. Prior research, and theory, also supported the idea that optimism could influence a young person's participation in delinquent behavior (Cuevas et al., 2017; Mahler et al., 2017); however, the relationship between attachment and optimism was not as well supported in the literature beyond suggestions from Sewell and colleagues' theory of status attainment. Thus, it appears that parental and peer attachment impact delinquency in an indirect manner through optimism. As a whole, piecing all of these different factors together, the final hypothesis is supported with the findings of this study. The best way to see the results of this finding would be through policy; however, it would need to be through programming that trains the parents and caregivers of at-risk or delinquent youth on how to encourage and improve the optimism their children have about their future, specifically through the expectations that they hold for their children. For example, when a young person participates in delinquent behaviors, one of the consequences could be to require the parents or caregivers of the young person to participate in workshops to teach them about the kinds of expectations they can have for their children, and how these expectations can impact their child's optimism about their future. Based on the findings of this study, and Sewell and colleague's theory of status attainment (1969), this could lead to lower levels of delinquent and criminal behavior.

Limitations

Although this study resulted in findings that supported the proposed hypotheses, there are still several limitations to the study. The first limitation is that the offending variety of delinquency measure was a self-reported, recall measure. This means that not only were researchers relying on participants of the study to be truthful in reporting the delinquent and criminal activities that they participated in over the last six to twelve months (depending on the wave of data collection), but they were also relying on participants to be able to accurately remember. One issue with recall measures is that it can sometimes be difficult for someone to remember what was six months ago versus eight months ago, meaning there is the potential for someone to report that they did participate in delinquent or criminal behavior, but it actually falls outside of the recall period – which opens this measure up to the potential of being inaccurate. One thing to keep in mind is that participating in delinquent or criminal activity would hopefully be something that someone remembers, as it is hopefully not an everyday, commonplace occurrence.

A second limitation of this study is that the sample assessed is a sample of all justice-involved young people, meaning the generalizability of the findings may be limited. For instance, the findings cannot necessarily be applied to young people who have participated in low levels of delinquent behavior because the sample assessed here included juveniles that had been convicted of a felony or serious misdemeanor. This does not mean that attachment and optimism are not important factors for young people that participate in low levels of delinquent behavior, or young people that do not actively participate in delinquent or criminal activity at all. It can be argued that all young people, whether they are involved in delinquent activity or not, could benefit from close attachments, and specifically the optimism that can come from parental

and peer attachments. However, the extent to which these relationships can result in changes in behavior is unknown, as the findings of this study pertain specifically to seriously justice-involved youth.

A third limitation for this study has to do with attrition, or missingness of participants/responses over the course of data collection. The Pathways study consisted of a total of 11 waves of data collection, and although the study in general maintained high levels of participation, the waves did have lower participation, especially with certain aspects of the study, as the waves went on. For example, this study used data from the Baseline Wave and Wave 5 because Waves 9 and 10 had complete missingness with questions regarding maternal and paternal warmth (which created the parental attachment variable for this study). Attrition has the potential to impact the results of this study because the attributes of the different variables assessed are unknown for the 120 individuals that did not participate in Wave 5. Specifically, these 120 people could be different from those included in the study by their attachments to their parents and peers or their involvement in delinquent and criminal activity. For example, one could speculate the reason that some, or all, of the missing participants were missing is because they were detained or incarcerated, which would impact the offending variety delinquency measures of this study. However, this is information that is unknown, and these conclusions cannot be drawn.

A fourth limitation of this study is that the study was a secondary data analysis. Although there are benefits of such a study, including foregoing issues with data collection, there are also some issues, including the method of data collection and whether the original researchers were able to measure what they intended (Schutt, 2019). Referring first to the method of data collection, the participants of the Pathways study participated in interviews between themselves

and Pathways staff. One issue with interviews is that researchers rely on participants to be truthful in their responses, when participants may choose not to be truthful in an effort to appease researchers. Additionally, there is the issue of relying on the original researchers to have asked questions that measured what they intended to measure. This may be the case for the questions regarding maternal and paternal warmth asked within Pathways, especially given the finding that, although was expected, was not strong regarding parental attachment and delinquency. The Pathways study does provide a list of the questions asked of participants for each measure in an effort to minimize any error or issues.

Conclusion

Overall, this secondary data analysis of seriously justice-involved young people produced findings that will help inform future research and policy formulation efforts. Again, it is important to support delinquency- and justice-involved young people in desisting from delinquent and criminal offending because of the life-long impacts such actions can have. Arguably, one of the main findings of this study that can be used to help support young people in desisting from delinquency and criminal offending is the importance of optimism, via aspirations for their future prospects. The importance of optimism can be addressed within policy in two different ways. The first way is through parenting courses to encourage, and inform, parents that the expectations they place upon their children will influence their children's future aspirations, and this can impact their decisions to participate in delinquent or criminal behavior. A second way this can be implemented in through programming intended to support young people in desisting from delinquent or criminal behavior. Implementing aspects of programming that can support young people in establishing goals and aspirations for themselves, as has been found in prior studies and was found in this study, has the potential to change a young person's decision to participate in delinquent or criminal behavior.

UNLV

ORI-HS, Non-Committee Review
Notice of Excluded Activity

DATE: April 25, 2023

TO: Alexandra Nur
FROM: Office of Research Integrity - Human Subjects

PROTOCOL TITLE: UNLV-2023-203 The Impact of Attachment and Optimism on Delinquency
SUBMISSION TYPE: Initial

ACTION: No Human Subjects Research
REVIEW DATE: April 25, 2023
REVIEW TYPE: ADMINISTRATIVE REVIEW

Thank you for your submission of materials for this proposal. This memorandum is notification that the proposal referenced above has been reviewed as indicated in Federal regulatory statutes 45 CFR 46.

The Office of Research Integrity - Human Subjects has determined this request does not meet the definition of 'research with human subjects' according to federal regulations, and there is no further requirement for IRB review.

Any changes to this excluded activity may cause this request to require a different level of review, so please contact our office to discuss any anticipated changes.

If you have questions, please contact the Office of Research Integrity - Human Subjects at IRB@unlv.edu or call 702-895-2794. Please include your project title and project ID in all correspondence.

Pathways to Desistance Questionnaires:

Delinquency

In the past N months, have you…

    (1) Yes

    (5) No

Total Offending Variety

    Purposely destroyed or damaged property that did not belong to you?

        How many times have you done this in the past N months?

        Thinking about the last time, was anyone with you at that time?

        Did you purposely destroy or damage property that did not belong to you in month 1?

        Did you purposely destroy or damage property that did not belong to you in month 2?

        Did you purposely destroy or damage property that did not belong to you in month 3?

        Did you purposely destroy or damage property that did not belong to you in month 4?

        Did you purposely destroy or damage property that did not belong to you in month 5?

        Did you purposely destroy or damage property that did not belong to you in month 6?

Did you purposely destroy or damage property that did not belong to you in month 7?

Did you purposely destroy or damage property that did not belong to you in month 8?

Did you purposely destroy or damage property that did not belong to you in month 9?

Did you purposely destroy or damage property that did not belong to you in month 10?

Did you purposely destroy or damage property that did not belong to you in month 11?

Did you purposely destroy or damage property that did not belong to you in month 12?

Did you purposely destroy or damage property that did not belong to you in month 13?

Did you purposely destroy or damage property that did not belong to you in month 14?

Purposely set fire to a house, building, car, or vacant lot?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you purposely set fire to a house, building, car or vacant lot in month 1?

Did you purposely set fire to a house, building, car or vacant lot in month 2?

Did you purposely set fire to a house, building, car or vacant lot in month 3?

Did you purposely set fire to a house, building, car or vacant lot in month 4?

Did you purposely set fire to a house, building, car or vacant lot in month 5?

Did you purposely set fire to a house, building, car or vacant lot in month 6?

Did you purposely set fire to a house, building, car or vacant lot in month 7?

Did you purposely set fire to a house, building, car or vacant lot in month 8?

Did you purposely set fire to a house, building, car or vacant lot in month 9?

Did you purposely set fire to a house, building, car or vacant lot in month 10?

Did you purposely set fire to a house, building, car or vacant lot in month 11?

Did you purposely set fire to a house, building, car or vacant lot in month 12?

Did you purposely set fire to a house, building, car or vacant lot in month 13?

Did you purposely set fire to a house, building, car or vacant lot in month 14?

Entered or broken into a building to steal something?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you enter or break into a building to steal something in month 1?

Did you enter or break into a building to steal something in month 2?

Did you enter or break into a building to steal something in month 3?

Did you enter or break into a building to steal something in month 4?

Did you enter or break into a building to steal something in month 5?

Did you enter or break into a building to steal something in month 6?

Did you enter or break into a building to steal something in month 7?

Did you enter or break into a building to steal something in month 8?

Did you enter or break into a building to steal something in month 9?

Did you enter or break into a building to steal something in month 10?

Did you enter or break into a building to steal something in month 11?

Did you enter or break into a building to steal something in month 12?

Did you enter or break into a building to steal something in month 13?

Did you enter or break into a building to steal something in month 14?

Stolen something from a store?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you steal something from a store in month 1?

Did you steal something from a store in month 2?

Did you steal something from a store in month 3?

Did you steal something from a store in month 4?

Did you steal something from a store in month 5?

Did you steal something from a store in month 6?

Did you steal something from a store in month 7?

Did you steal something from a store in month 8?

Did you steal something from a store in month 9?

Did you steal something from a store in month 10?

Did you steal something from a store in month 11?

Did you steal something from a store in month 12?

Did you steal something from a store in month 13?

Did you steal something from a store in month 14?

Bought, received, or sold something that you knew was stolen?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you buy, receive, or sell something that you knew was stolen in month 1?

Did you buy, receive, or sell something that you knew was stolen in month 2?

Did you buy, receive, or sell something that you knew was stolen in month 3?

Did you buy, receive, or sell something that you knew was stolen in month 4?

Did you buy, receive, or sell something that you knew was stolen in month 5?

Did you buy, receive, or sell something that you knew was stolen in month 6?

Did you buy, receive, or sell something that you knew was stolen in month 7?

Did you buy, receive, or sell something that you knew was stolen in month 8?

Did you buy, receive, or sell something that you knew was stolen in month 9?

Did you buy, receive, or sell something that you knew was stolen in month 10?

Did you buy, receive, or sell something that you knew was stolen in month 11?

Did you buy, receive, or sell something that you knew was stolen in month 12?

Did you buy, receive, or sell something that you knew was stolen in month 13?

Did you buy, receive, or sell something that you knew was stolen in month 14?

Used checks or credit cards illegally?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you use checks or credit cards illegally in month 1?

Did you use checks or credit cards illegally in month 2?

Did you use checks or credit cards illegally in month 3?

Did you use checks or credit cards illegally in month 4?

Did you use checks or credit cards illegally in month 5?

Did you use checks or credit cards illegally in month 6?

Did you use checks or credit cards illegally in month 7?

Did you use checks or credit cards illegally in month 8?

Did you use checks or credit cards illegally in month 9?

Did you use checks or credit cards illegally in month 10?

Did you use checks or credit cards illegally in month 11?

Did you use checks or credit cards illegally in month 12?

Did you use checks or credit cards illegally in month 13?

Did you use checks or credit cards illegally in month 14?

Stolen a car or motorcycle to keep or sell?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you steal a car or motorcycle to keep or sell in month 1?

Did you steal a car or motorcycle to keep or sell in month 2?

Did you steal a car or motorcycle to keep or sell in month 3?

Did you steal a car or motorcycle to keep or sell in month 4?

Did you steal a car or motorcycle to keep or sell in month 5?

Did you steal a car or motorcycle to keep or sell in month 6?

Did you steal a car or motorcycle to keep or sell in month 7?

Did you steal a car or motorcycle to keep or sell in month 8?

Did you steal a car or motorcycle to keep or sell in month 9?

Did you steal a car or motorcycle to keep or sell in month 10?

Did you steal a car or motorcycle to keep or sell in month 11?

Did you steal a car or motorcycle to keep or sell in month 12?

Did you steal a car or motorcycle to keep or sell in month 13?

Did you steal a car or motorcycle to keep or sell in month 14?

Sold marijuana?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you sell marijuana in month 1?

Did you sell marijuana in month 2?

Did you sell marijuana in month 3?

Did you sell marijuana in month 4?

Did you sell marijuana in month 5?

Did you sell marijuana in month 6?

Did you sell marijuana in month 7?

Did you sell marijuana in month 8?

Did you sell marijuana in month 9?

Did you sell marijuana in month 10?

Did you sell marijuana in month 11?

Did you sell marijuana in month 12?

Did you sell marijuana in month 13?

Did you sell marijuana in month 14?

Sold other illegal drugs (cocaine, crack, heroine)?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you sell other illegal drugs in month 1?

Did you sell other illegal drugs in month 2?

Did you sell other illegal drugs in month 3?

Did you sell other illegal drugs in month 4?

Did you sell other illegal drugs in month 5?

Did you sell other illegal drugs in month 6?

Did you sell other illegal drugs in month 7?

Did you sell other illegal drugs in month 8?

Did you sell other illegal drugs in month 9?

Did you sell other illegal drugs in month 10?

Did you sell other illegal drugs in month 11?

Did you sell other illegal drugs in month 12?

Did you sell other illegal drugs in month 13?

Did you sell other illegal drugs in month 14?

Carjacked someone?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you have a gun the last time you did this?

Did you carjack someone in month 1?

Did you carjack someone in month 2?

Did you carjack someone in month 3?

Did you carjack someone in month 4?

Did you carjack someone in month 5?

Did you carjack someone in month 6?

Did you carjack someone in month 7?

Did you carjack someone in month 8?

Did you carjack someone in month 9?

Did you carjack someone in month 10?

Did you carjack someone in month 11?

Did you carjack someone in month 12?

Did you carjack someone in month 13?

Did you carjack someone in month 14?

Driven while you were drunk or high?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you drive while you were drunk or high in month 1?

Did you drive while you were drunk or high in month 2?

Did you drive while you were drunk or high in month 3?

Did you drive while you were drunk or high in month 4?

Did you drive while you were drunk or high in month 5?

Did you drive while you were drunk or high in month 6?

Did you drive while you were drunk or high in month 7?

Did you drive while you were drunk or high in month 8?

Did you drive while you were drunk or high in month 9?

Did you drive while you were drunk or high in month 10?

Did you drive while you were drunk or high in month 11?

Did you drive while you were drunk or high in month 12?

Did you drive while you were drunk or high in month 13?

Did you drive while you were drunk or high in month 14?

Been paid by someone for having sexual relationship with them?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you get paid by someone for having sexual relationships with them in month 1?

Did you get paid by someone for having sexual relationships with them in month 2?

Did you get paid by someone for having sexual relationships with them in month 3?

Did you get paid by someone for having sexual relationships with them in month 4?

Did you get paid by someone for having sexual relationships with them in month 5?

Did you get paid by someone for having sexual relationships with them in month 6?

Did you get paid by someone for having sexual relationships with them in month 7?

Did you get paid by someone for having sexual relationships with them in month 8?

Did you get paid by someone for having sexual relationships with them in month 9?

Did you get paid by someone for having sexual relationships with them in month 10?

Did you get paid by someone for having sexual relationships with them in month 11?

Did you get paid by someone for having sexual relationships with them in month 12?

Did you get paid by someone for having sexual relationships with them in month 13?

Did you get paid by someone for having sexual relationships with them in month 14?

Forced someone to have sex with you?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you have a gun the last time you did this?

Did you force someone to have sex with you in month 1?

Did you force someone to have sex with you in month 2?

Did you force someone to have sex with you in month 3?

Did you force someone to have sex with you in month 4?

Did you force someone to have sex with you in month 5?

Did you force someone to have sex with you in month 6?

Did you force someone to have sex with you in month 7?

Did you force someone to have sex with you in month 8?

Did you force someone to have sex with you in month 9?

Did you force someone to have sex with you in month 10?

Did you force someone to have sex with you in month 11?

Did you force someone to have sex with you in month 12?

Did you force someone to have sex with you in month 13?

Did you force someone to have sex with you in month 14?

Killed someone?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you have a gun the last time you did this?

Did you kill someone in month 1?

Did you kill someone in month 2?

Did you kill someone in month 3?

Did you kill someone in month 4?

Did you kill someone in month 5?

Did you kill someone in month 6?

Did you kill someone in month 7?

Did you kill someone in month 8?

Did you kill someone in month 9?

Did you kill someone in month 10?

Did you kill someone in month 11?

Did you kill someone in month 12?

Did you kill someone in month 13?

Did you kill someone in month 14?

Shot someone?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you shoot someone in month 1?

Did you shoot someone in month 2?

Did you shoot someone in month 3?

Did you shoot someone in month 4?

Did you shoot someone in month 5?

Did you shoot someone in month 6?

Did you shoot someone in month 7?

Did you shoot someone in month 8?

Did you shoot someone in month 9?

Did you shoot someone in month 10?

Did you shoot someone in month 11?

Did you shoot someone in month 12?

Did you shoot someone in month 13?

Did you shoot someone in month 14?

Shot AT someone where you were the one who pulled the trigger?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you shoot AT someone where you were the one who pulled the trigger in month 1?

Did you shoot AT someone where you were the one who pulled the trigger in month 2?

Did you shoot AT someone where you were the one who pulled the trigger in month 3?

Did you shoot AT someone where you were the one who pulled the trigger in month 4?

Did you shoot AT someone where you were the one who pulled the trigger in month 5?

Did you shoot AT someone where you were the one who pulled the trigger in month 6?

Did you shoot AT someone where you were the one who pulled the trigger in month 7?

Did you shoot AT someone where you were the one who pulled the trigger in month 8?

Did you shoot AT someone where you were the one who pulled the trigger in month 9?

Did you shoot AT someone where you were the one who pulled the trigger in month 10?

Did you shoot AT someone where you were the one who pulled the trigger in month 11?

Did you shoot AT someone where you were the one who pulled the trigger in month 12?

Did you shoot AT someone where you were the one who pulled the trigger in month 13?

Did you shoot AT someone where you were the one who pulled the trigger in month 14?

Taken something from another person by force, using a weapon?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you have a gun the last time you did this?

Did you take something from another person by force, using a weapon in month 1?

Did you take something from another person by force, using a weapon in month 2?

Did you take something from another person by force, using a weapon in month 3?

Did you take something from another person by force, using a weapon in month 4?

Did you take something from another person by force, using a weapon in month 5?

Did you take something from another person by force, using a weapon in month 6?

Did you take something from another person by force, using a weapon in month 7?

Did you take something from another person by force, using a weapon in month 8?

Did you take something from another person by force, using a weapon in month 9?

Did you take something from another person by force, using a weapon in month 10?

Did you take something from another person by force, using a weapon in month 11?

Did you take something from another person by force, using a weapon in month 12?

Did you take something from another person by force, using a weapon in month 13?

Did you take something from another person by force, using a weapon in month 14?

Taken something from another person by force, without a weapon?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you take something from another person by force, without a weapon in month 1?

Did you take something from another person by force, without a weapon in month 2?

Did you take something from another person by force, without a weapon in month 3?

Did you take something from another person by force, without a weapon in month 4?

Did you take something from another person by force, without a weapon in month 5?

Did you take something from another person by force, without a weapon in month 6?

Did you take something from another person by force, without a weapon in month 7?

Did you take something from another person by force, without a weapon in month 8?

Did you take something from another person by force, without a weapon in month 9?

Did you take something from another person by force, without a weapon in month 10?

Did you take something from another person by force, without a weapon in month 11?

Did you take something from another person by force, without a weapon in month 12?

Did you take something from another person by force, without a weapon in month 13?

Did you take something from another person by force, without a weapon in month 14?

Beaten up or physically attacked someone so badly that they probably needed a doctor?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 1?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 2?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 3?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 4?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 5?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 6?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 7?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 8?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 9?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 10?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 11?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 12?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 13?

Did you beat up or physically attack someone so badly that they probably needed a doctor in month 14?

Been in a fight?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you get in a fight in month 1?

Did you get in a fight in month 2?

Did you get in a fight in month 3?

Did you get in a fight in month 4?

Did you get in a fight in month 5?

Did you get in a fight in month 6?

Did you get in a fight in month 7?

Did you get in a fight in month 8?

Did you get in a fight in month 9?

Did you get in a fight in month 10?

Did you get in a fight in month 11?

Did you get in a fight in month 12?

Did you get in a fight in month 13?

Did you get in a fight in month 14?

Beaten up, threatened, or physically attacked someone as part of a gang?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you have a gun the last time you did this?

Did you beat up, threaten, or physically attack someone as part of a gang in month 1?

Did you beat up, threaten, or physically attack someone as part of a gang in month 2?

Did you beat up, threaten, or physically attack someone as part of a gang in month 3?

Did you beat up, threaten, or physically attack someone as part of a gang in month 4?

Did you beat up, threaten, or physically attack someone as part of a gang in month 5?

Did you beat up, threaten, or physically attack someone as part of a gang in month 6?

Did you beat up, threaten, or physically attack someone as part of a gang in month 7?

Did you beat up, threaten, or physically attack someone as part of a gang in month 8?

Did you beat up, threaten, or physically attack someone as part of a gang in month 9?

Did you beat up, threaten, or physically attack someone as part of a gang in month 10?

Did you beat up, threaten, or physically attack someone as part of a gang in month 11?

Did you beat up, threaten, or physically attack someone as part of a gang in month 12?

Did you beat up, threaten, or physically attack someone as part of a gang in month 13?

Did you beat up, threaten, or physically attack someone as part of a gang in month 14?

Carried a gun?

How many times have you done this in the past N months?

Thinking about the last time, was anyone with you at that time?

Did you carry a gun in month 1?

Did you carry a gun in month 2?

Did you carry a gun in month 3?

Did you carry a gun in month 4?

Did you carry a gun in month 5?

Did you carry a gun in month 6?

Did you carry a gun in month 7?

Did you carry a gun in month 8?

Did you carry a gun in month 9?

Did you carry a gun in month 10?

Did you carry a gun in month 11?

Did you carry a gun in month 12?

Did you carry a gun in month 13?

Did you carry a gun in month 14?

Parental Warmth (Maternal Warmth and Paternal Warmth)

Mother

Exact relationship of mother.

(12) Biological mother

(13) Biological sister

(15) Biological grandmother

(18) Stepmother

(19) Stepsister

(22) Adoptive mother

(23) Adoptive sister

(29) Aunt

(31) Female cousin

(34) Niece

(43) Foster mother

(46) Foster sister

(95) Other relative

(96) Other (not biologically related)

Parental Warmth – Mother

When you and your mother have spent time talking or doing things together how often did your mother…

(1) Always

(2) Often

(3) Sometimes

(4) Never

Help you do something that was important? [Reverse coded]

Let you know she really cares about you? [Reverse coded]

Listen carefully to your point of view? [Reverse coded]

Act supportive and understanding toward you? [Reverse coded]

Act loving or affectionate towards you? [Reverse coded]

Have a good laugh with you about something that was funny? [Reverse coded]

Let you know that she appreciates you, your ideas, or the things you do? [Reverse coded]

Tell you she loves you? [Reverse coded]

Understand the way you feel about things? [Reverse coded]

Father

Exact relationship of father.

(11) Biological father

(14) Biological brother

(16) Biological grandfather

(17) Stepfather

(20) Stepbrother

(21) Adoptive father

(24) Adoptive brother

(30) Uncle

(32) Male cousin

(33) Nephew

(44) Foster father

(45) Foster brother

(95) Other relative

(96) Other (not biologically related)

Parental Warmth – Father

When you and your father have spent time talking or doing things together how often did your father…

      (1) Always

      (2) Often

      (3) Sometimes

      (4) Never

Help you do something that was important? [Reverse coded]

Let you know he really cares about you? [Reverse coded]

Listen carefully to your point of view? [Reverse coded]

Act supportive and understanding toward you? [Reverse coded]

Act loving or affectionate towards you? [Reverse coded]

Have a good laugh with you about something that was funny? [Reverse coded]

Let you know that he appreciates you, your ideas, or the things you do? [Reverse coded]

Tell you he loves you? [Reverse coded]

Understand the way you feel about things? [Reverse coded]

Friendship Quality

Friendship Quality Questions

Instructions and Items:

= (1) Not at all

= (2) A little

= (3) Quite a bit

= (4) Very much

How much can you count on your friend for help with a problem?

How much could you count on your friend to help you if a family member very close to you died?

How close do you think you will be to your friend in ten years?

How much would you miss your friend if you could not see or talk with him/her for a month?

If you wanted to go out and do something some night, how sure are you that your friend would be willing to do something with you?

How much do you depend on your friend?

How much can you count on your friend to listen to you when you are very angry at someone else?

How much can you count on your friend to take your mind off of your problems when you feel under stress?

How much has your friend tried to stop you from doing something that was wrong or illegal?

How much has your friend tried to influence you to do something most people would think is wrong? [Reverse coded]

Optimism

Aspirations for Work, Family & Law

How important is it to you…

(1) Not at all important

(2) Not too important

(3) Somewhat important

(4) Pretty important

(5) Very important

To have a good job or career.

To graduate from college.

To earn a good living.

To provide a good home for your family.

To have a good marriage.

To have a good relationship with your children.

To stay out of trouble with the law.

Age

Instructions and Items

    = (1) Yes

    = (5) No

    Subject's birth date measured from Baseline.

    Date at start of questionnaire.

Gender

Instructions and Items

    = (1) Yes

    = (5) No

    What is your gender?

        = (1) Male

        = (2) Female

Ethnicity

Collateral self-reported ethnicity based on Race and Hispanic measures. Six ethnic groups result:

    White

    Black

    Asian

    Native American

    Hispanic

    Other

Site

There are no questions, this variable is computed based on the Study ID. Study IDs that are below 49,999 represent Philadelphia subjects. Study IDs that are above 50,000 represent Phoenix subjects.

Delinquent Peer Influence

Antisocial Influence – Peers

How many of your friends have suggested that you should go out drinking with them?

How many of your friends have suggested or claimed that you have to get drink to have a good time?

How many of your friends have suggested or claimed that you have to be high on drugs to have a good time?

How many of your friends have suggested that you should sell drugs?

How many of your friends have suggested that you should steal something?

How many of your friends have suggested that you should hit or beat someone up?

How many of your friends have suggested that you should carry a weapon?

Table C1. Path Model Results for Baseline Wave and Wave 5

	Baseline Wave			Wave 5		
	Estimate	S.E.	Two-Tailed p-Value	Estimate	S.E.	Two-Tailed p-Value
Optimism on						
Parental Attachment	0.169***	0.022	0.000	0.105***	0.025	0.000
Peer Attachment	0.179***	0.034	0.000	0.148***	0.037	0.000
Delinquency on						
Parental Attachment	-0.011	0.008	0.128	-0.004	0.004	0.391
Peer Attachment	0.023*	0.011	0.043	0.002	0.006	0.782
Optimism	-0.049***	0.009	0.000	-0.022***	0.005	0.000
Age	0.023***	0.004	0.000	-0.002	0.002	0.353
Gender	-0.083***	0.014	0.000	-0.014	0.008	0.078
Ethnicity	0.000	0.013	0.977	0.021**	0.007	0.004
Site	0.036**	0.010	0.001	-0.005	0.006	0.445
Delinquent Peer Influence	0.112***	0.006	0.000	0.064***	0.004	0.000
Intercepts						
Optimism	3.307***	0.125	0.000	3.690***	0.125	0.000
Delinquency	-0.073	0.086	0.397	0.104	0.054	0.056

*$p < 0.05$
**$p < 0.01$
***$p < 0.001$

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- Interacted with and mentored undergraduate students across several disciplines as a teaching assistant for two courses.

TASERCON, Las Vegas, NV   January 2023
Research Assistant
- Assisted trained professionals in assessing use of tasers within a controlled experiment.
- Tracked data regarding time and use of tasers for a control and research group.

TEACHING EXPERIENCE

UNLV College of Urban Affairs   January 2022 - Present
GSC 300 – Community Resilience Instructor
- Instructed a total of three GSC 300 courses.
- Supported students throughout weekly assignments, writing projects, and media projects.

AWARDS & CERTIFICATIONS

The Collaborative Institutional Training Initiative (CITI)   October 2021 - October 2026

WORK EXPERIENCE

Online College Coach, EdFront Online   September 2020 - Present
Peer Mentor, Orangewood Foundation   July 2019 - August 2022