Incarceration in the Household: New Perspectives on Risk and Prevention

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Doctor of Philosophy

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Be Brave Enough to Hope!

Elizabeth Gaskell

This work is dedicated to my husband, Nathanael Nichols, and my parents, Robert and Susan Bever. Nathanael, I would be lost without you. Thank you for supporting me through this journey, your endless encouragement, and your unconditional love. Mom and Dad, thank you for teaching me that a compassionate heart is as valuable as a sharp mind, and that the P in PhD stands for Perseverance!

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Three Manuscript Dissertation Overview

This dissertation presents a line of research that expands the current literature on the ripple effects of the incarceration of family members on youth's school experience. It explores the impact of household member incarceration on youth's school outcomes, evaluates a new prison based intervention, and proposes protective factors for adolescent achievement. The proposal is written according to guidelines in the Curry School of Education's Dissertation Manual: Guidelines for Doctoral Dissertations for the manuscript-style dissertation option.

The Curry School Guidelines require the doctoral candidate to take a lead role on two research papers, contribute to a third research paper, and submit an additional document that articulates the conceptual link among the manuscripts. I am the lead author on two of the studies described here, and contributed in a substantial way as second author on the third. The first study, *Incarceration in the Household: Academic outcomes of adolescents with incarcerated household members*, has been published in *The Journal of Youth and Adolescence* (Nichols & Loper, 2012). The second study, in which I was second author, *Evaluating the content and reception of messages from incarcerated parents to their children,* was published by *The Journal of Orthopsychiatry* (Folk, Nichols, Dallaire, & Loper, 2012). The third study, *Academic risk and resiliency for adolescents with incarcerated parents,* will be submitted to the appropriate referred journal upon completion. The remainder of this proposal covers the rationale for the presented line of research (pp. 3 - 10), the published manuscript for Study 1 (pp. 11-51) the published manuscript for study 2 (pp. 52-95), and the completed manuscript for Study

3 (pp. 96 -131). The final document is a letter from the lead author (Johanna Folk) of my second article attesting to my contribution to the manuscript and study.

Incarceration in the Family: New Perspectives

The United States has the highest incarceration rate in the world: about 756 per 100,000 people (Walmsley, 2009). About one half of these individuals are parents (Glaze & Maruschak, 2008). The National Bureau of Justice Statistics estimates 2.3% of minors living in the United States have at least one parent in prison (Glaze & Maruschak, 2008). A shocking one in four black children and 1 in 25 white children and born in 1990 experienced the incarceration of one parent before the age of 14 (Wilderman, 2009); and an estimated one-third of prisoners' children will turn 18 while their parent is still in prison (Glaze & Maruschak, 2008). This poses a new, unique challenge to educators and administrators as this relatively invisible and high-risk population passes through their classrooms. *Parental incarceration* generally refers to the removal and imprisonment of a parent for more than one night, either in jail or prison. For families and children, this removal creates ripple effects of risk that result in long lasting harm and adjustment problems (for reviews see Murray & Farrington, 2008 and Murray, Farrington, and Sekol, 2012). The primary mechanisms of risk set off by incarceration are theorized to be a broken sense of attachment or loss of connection, loss of economic and social resources, social modeling of anti-social behavior and poor monitoring, and stigma. Others suggest that the removal of the criminal parent is actually beneficial to the child, and any observed risks are actually reflective of the pre-incarceration characteristics of the parent, household and general high-risk environment (Hagan & Dinovitzer, 1999).

While having a parent incarcerated has been linked to multiple indicators for poor life adjustment such as poor mental health and anti-social behavior, one of the most potentially harmful outcomes for youth is dropping out of school. The failure to graduate high school is considered a serious indicator for poor life adjustment. It is related to lower lifetime income, and it increases chances of being unemployed, welfare-dependent, and incarcerated (NCES, 2010). High school dropout in youth with incarcerated parents may partially explain the high rates of second-generation incarceration, while graduation may be an important buffer against engaging in criminal behavior. To date, researchers have varied in their estimates of the risks that youth with incarcerated parents face in the schools. While the majority of the literature suggests that this group has lower grades, test scores, and greater risks of dropping out of school (Cho, 2009a; Cho, 2011; Hagan & Foster, 2012; Murray & Farrington, 2008; Sack, 1976; Stanton, 1980; Trice & Brewster, 2004), a recent meta-analysis by Murray, Farrington, & Sekol (2012) suggest that these studies were not statistically rigorous enough to provide valid conclusions. My previous research (Nichols & Loper, 2012) suggests that parental incarceration may have less pernicious effects on educational outcomes than the incarceration of other more remotely related household members. Qualitative studies also suggest that children feel isolated at school, and that peers and teachers treat them differently (Nesmith & Ruhland, 2008). Incarceration in the family may affect adolescents' relationships with peers, teachers, as well as influence their academic motivation, achievement, and behaviors (Shlafer & Poehlmann, 2011). While based on this literature, schools appear to be just another arena for youth to experience failure and isolation, it is possible that schools are a crucial safety net for these youth, as they are the only institution that these children are guaranteed to

pass through. The following studies attempt to gain a better understanding of how mass incarceration influences youth's school experience, and what factors may help these youth thrive. The three studies (1) further examine the presence of poor school outcomes in a larger, nationally representative sample of youth with incarcerated household members; (2) describe a new intervention that increases contact between prisoner and child, which has been implicated in improving educational outcomes (Trice & Brewster, 2004; Hagan & Foster, 2012) and (3) finally examines potential academic risk and protective factors that promote academic success within adolescents with incarcerated parents.

The first study, *Incarceration in the household: Academic outcomes of adolescents with incarcerated household members* (Nichols & Loper, in 2012), used data from the National Longitudinal Survey of Youth: Child and Young Adult Surveys (1992-2008), to explore whether having any household member incarcerated was associated with youth's school outcomes, over and above the contribution of socio-economic strain. Out of the sample of 3338 subjects, 585 reported one or more household members incarcerated during their adolescence. We found that youth reporting an incarcerated household member had higher reports of risk factors such as poverty, mother not having a high school degree/ GED, minority status, poorer home quality (as measured by the HOME), and lower IQ. They also reported higher rates of extended school absences and failure to graduate high school. We ran weighted regression analyses to determine the unique contribution of household member incarceration, above and beyond the already mentioned risk factors. We found that while having a household member incarcerated was significantly associated with extended school absence and failing to graduate high

school, the actual impact, as estimated by odds ratios of less than 2, were small. We then re-ran these analyses and included the nature of the youth-prisoner relationship (parent, sibling, other extended). The results were counter to our hypotheses, in that neither parent nor sibling incarceration were significantly related to either risky outcome. However, having a distantly related household member (cousin, aunt/uncle, grandparent, non-relative) incarcerated was significantly associated with both outcomes and had a small impact on the actual increased likelihood of extended absences (OR = 1.87) and failure to graduate high school (OR = 1.98). The nature of the subject recruitment, offspring of original female NSLY 1979 participants, may have excluded the highest risk participants as many incarcerated mothers were likely unavailable for follow up studies, and in effect under-estimated the impact of having a parent incarcerated. This study found that negative effects of incarceration of any household member is evident in a national community sample, and that having an incarcerated extended household member had a small but significant impact on youth's school outcomes, beyond the influence of socio-economic strain.

In our second study, *Evaluating the content and reception of video-taped messages from incarcerated parents to their children* (Folk, Nichols, Dallaire, & Loper, 2012), my co-authors and I evaluated the content and responses to video messages from incarcerated parents to their children as part of The Messages Project. Frequency of contact (Trice & Brewster, 2004), and a general sense of connectedness (Hagan & Foster, 2012) to the incarcerated parent have been found to partially protect youth from decreases in achievement and school drop out. However, no study has examined the quality and content of these remote-interactions. We surveyed 186 imprisoned parents

(54% mothers), coded 172 video messages, and collected follow up data from 61 of the caregivers of their children to assess the relationship between parent mood prior to taping, video content, and child mood after viewing the video message.

Almost all of the messages were used to communicate the parents' love to their children (98.8%), and most caregivers reported the message content as positive (73.2%). Mothers were significantly more likely to cry and express anxiety during taping than fathers, while fathers were significantly more likely to express a negative attitude towards the child's caregiver. Overall, if the child lived with their parent prior to incarceration they reported to be in a better mood after viewing the taped message. Additionally, if the parent demonstrated more positive interaction qualities, such as praising the child, expressing affection, or showing interest in the child's world, then the children watched the message significantly more frequently. Structural equation modeling revealed that parents who were in negative moods prior to taping also demonstrated more negative emotions in their messages, which was significantly correlated to the caregiver reporting the child demonstrating negative affect. This study suggests that the displays of negative messages and content, as well as the emotional state of the incarcerated parent, impact the child's response to the remote contact experience. The quality and content of the contact has an impact on the child's response. While parenting classes and direct supervision by mental health staff can potentially reduce the occurrences of negative emotional displays during contact, it is impossible to guarantee that all children will have only beneficial responses to these parent-contact based interventions. If the messages which the parents communicate are positive, warm, and include messages which focus on the youth's interests, it is possible that these video messages could help the child feel more connected

to their incarcerated parent, which in turn would influence their school performance (Hagan & Foster, 2012). Additionally, these positive messages are directly related to the frequency of the youth playing the DVD. If the child plays the DVD more often, they have more frequent "contact" with their parent, which has also been found to protect youth from dropping out of school and general declines in school achievement. While this study was limited in its ability to follow up on educational performance, we can assume based on previous literature that the increased accessibility to parent's voices, faces and positive messages will enhance the child's sense of closeness to their parent, which in turn may protect against becoming disengaged from school. Additionally, it may protect against the child developing externalizing behaviors at school after visitation, which would in turn allow them to spend more time learning in the classroom. If the youth is confident in their parent's well being, and the security of their relationship, it will free up significant mental energy, which can be focused on succeeding in school.

The final study, *Academic risk and resiliency for adolescents with incarcerated parents* (Nichols, Loper, & Meyer, here presented), explores the school risks associated with having a parent incarcerated, as well as the school and individual characteristics that may protect adolescents from those risks. While there are multiple mechanisms associated with incarcerated related risk, this study will focus specifically on adolescence's sense of connection to school and parents/family. When a parent is incarcerated, the adolescents' connection to positive social contexts (family, school) is threatened, and the parent's involvement in their child's life is potentially reduced. Parent and family connection is considered to be especially important during adolescence, despite the increasing importance of peer groups, and has a significant impact on school

achievement (Jeynes, 2005; Witherspoon, Schotland, Way & Hughes, 2009). School connectedness is associated with increased school motivation, achievement, and preventing delinquent behavior (Maddox & Prinz, 2003, Catalano et al., 2004; Hawkins et al. 2005). We also examined school level characteristics (school size, mental health services, parent-teacher organization participation) that may promote a youth's sense of connectedness or their achievement.

We used data from the National Longitudinal Survey of Adolescent Health, a large nationally representative sample of adolescents to examine the risk of parental incarceration on youth's academic achievement (GPA and Highest Level of Education (HLE)) and problem school behavior (Truancy), using weighted multilevel modeling. We also explored potential individual and school level characteristics that promote school success and prevent truancy. We found that parental incarceration was significantly associated with all three outcomes, while controlling for demographics (SES, parental education, minority status, gender), parent/family connectedness, school connectedness, attending counseling, and various school characteristics. The effect size for parental incarceration for all three outcomes was relatively small (Truancy Percent Reduced Variance (PRV) = 3%; GPA PRV = .0.4%; HLE PRV = 0.4%) in the final model. Across the three outcomes, receiving counseling was an indicator of significant risk for poor outcomes, while school connectedness was protective for cumulative GPA and highest level of education, and parent/family connectedness was a protective factor for truancy and GPA. No school characteristic was significant for all three outcomes, but small school size and having onsite mental health services reduced truancy, while being referred for mental health services was protective for cumulative GPA. There was a

significant interaction in the HLE model, in that having a parent in prison reduced the positive relationship between school connectedness and highest level of education attained.

This study makes three new contributions to the research. First, it confirms the presence of a unique association between parental incarceration and various level of poor academic outcomes that have serious indications for life outcomes of adolescents of prisoners, while controlling for both school characteristics and adolescent's sense of connectedness. Second, it identifies individual and school risk markers and characteristics that promote school success in a nationally representative sample. Finally, the lack of impact that school connectedness has on adolescents with incarcerated parents' highest level of education attained demonstrates the seriousness of the associative risk, in that students who enjoy school and feel that they belong still have less college attainment than their peers who do not have parents incarcerated. School staff and service providers can support students who are interested in college, and are dealing with the stress of parental incarceration, by helping with transition planning and engaging family support for these plans. School interventions for these students need to focus on providing practical resources for college attendance and completion, as it appears that feeling connected to and enjoying school is not enough to help motivated students with parents in prison continue their education. Future research needs to continue to explore characteristics of schools, communities, and individuals that help students with parents in prison achieve academic success.

This line of research explores new and unique perspectives on how the incarceration of a parent or household member has impacted youth through the various

social contexts that influence development (household, parent-child relationship, and school). We examined both the occurrence of academic risk, as well as the potential for prison and school based interventions. This line of research will hopefully shed more light onto the pathway from risk to resilience for youth with incarcerated household members, within and beyond the classroom, which will be informative for teachers, administrators, and policy makers in the future.

Incarceration in the Household: Academic Outcomes of Adolescents with an Incarcerated Household Member

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Abstract

This study used a child-centered lens to examine the impact of incarceration on the school outcomes of youth who resided with a family member or family associate who was incarcerated prior to the youth's 18th birthday. We used data from 11 waves of the National Longitudinal Survey of Youth: Child and Young Adult (*n* = 3338, 53% female). Initial analyses indicated that youth who experienced a household members' incarceration evidenced more socioeconomic challenges, more frequent home adversities, and lower cognitive skills relative to youth who did not experience a household members' incarceration. Results also revealed that youth who had experienced a household member's incarceration were more likely to report extended absence from school and were less likely to graduate from high school relative to those youth who did not experience a household members' incarceration. Counter to our hypotheses, results revealed the incarceration of an extended family member being in the household was the only relation significantly associated with worse school outcomes. Plausibly, families who allow non-immediate criminally involved individuals to reside in the household are experiencing a more pervasive, chaotic home environment than those with a parent or sibling incarcerated. Our study suggests that efforts to address the needs of children with incarcerated parents need to be widened to those who experience the loss of any household member due to incarceration.

KEYWORDS : incarceration; academic outcomes; household members; at risk youth

Introduction

The United States has the highest incarceration rate in the world. While researchers have spent the last two decades beginning to understand the effects that mass incarceration policies have on the development of prisoners' children, they have overlooked the impact that the imprisonment of any household or family member may have on a young person's life. In a recent summary of the current literature on parental incarceration, Phillips (2011) calls researchers to transition from a parent-centered perspective to a child-centered perspective. She argues that by focusing narrowly on parental incarceration, we have missed the larger impact that mass incarceration policies have made on children's households, beyond the parents, and the resulting developmental risks that may accompany these transitions (Phillips, 2011). Only one study to date has attempted to look at how youth's outcomes are influenced by other's imprisonment, beyond parental incarceration. Farrington and colleagues (2001) examined the relationship between family members' incarceration and youth criminality in a sample of male youth in Pittsburgh. They found that the incarceration of any family member, other than grandmothers, resulted in a greater likelihood of the boy's arrest (O.R. = 2.4 - 4.7). The findings imply that the negative effects of incarceration extend beyond the parent-child relationship and include associated kin. The population used to examine the association between mass incarceration and negative life outcomes in youth needs to be broadened to include youth with any imprisoned household member.

Adolescents specifically may be uniquely impacted by the incarceration of a household member, as throughout this developmental period they are experiencing significant changes in cognitive, social and emotional abilities while having more

opportunities for engaging in risky behaviors (Shlafer & Poehlmann, 2011). The incarceration of a loved one may disrupt or alter the accomplishment of important developmental tasks, one of the most significant being high school graduation. The failure to graduate high school is considered a serious indicator for poor life adjustment. It is related to lower lifetime income, and it increases chances of being unemployed, welfare-dependent, and incarcerated (NCES, 2010). Incarceration in the family may affect an adolescents' relationships with peers, teachers, as well as influence their academic motivation, achievement, and behaviors (Shlafer & Poehlmann, 2011). In the present study, we use data from a national survey in order to examine the impact that household member incarceration has on adolescents engaging in academic risk behavior—specifically extended school absence and failing to graduate high school—in order to shed more light on this relatively invisible at-risk population.

Current Research on Children of Incarcerated Parents

Existing research on children with incarcerated parents gives the best insight into the trends that may be observed in the larger group of youth losing a family member to incarceration. As a group, children of incarcerated parents have high levels of delinquency as well as more frequent mental illness (Farrington, Jolliffe, Loeber, Southemer-Loeber & Kalb, 2001; Murray & Farrington, 2008; Phillips, Burns, Wagner, Kramer & Robbins, 2002). Generally, the state of the literature on children of incarcerated parents provides substantial evidence for the increased occurrence of negative behavioral outcomes, but there is still much to learn about the academic outcomes of these youth. As delinquent behavior is associated with higher risks of high school drop out (Battin-Pearson, Newcomb, Abbott, Hill, Catalano & Hawkins, 2000), it

is easy to assume an increase in academic failure and drop out in youth dealing with parental incarceration.

Academic Outcomes. Several studies report that children of incarcerated parents have higher rates of school failure, dropout, and lower school achievement than the general population (Dallaire, 2007a; Johnston, 1995; Murray & Farrington, 2008; Stanton, 1980; Trice & Breuster, 2004) However, this assertion is largely based on small sample studies. Murray and Farrington's (2008) Cambridge Study in Delinquent Development followed a sample of males from 1953 to 2008. They compared 23 boys with incarcerated parents to three control groups: boys with parents incarcerated before birth, boys separated for other reasons (e.g., hospitalization or death), and those who were not separated from parents. They found that in their sample, parental incarceration was a strong predictor for school failure. Specifically, sixty-eight percent of the boys with incarcerated parents had failed out of school by age 14 year, compared to 19 to 33 percent of the control groups. Trice and Brewster (2004) compared school failure and drop out between 58 adolescents with incarcerated mothers and their best friends. Similar to Murray & Farrington, they found that children with incarcerated mothers were significantly more likely than their friends to receive a failing grade on a report card and to drop out of school during adolescence.

Cho (2009a) examined a significantly larger sample of over 4,000 children of mothers incarcerated for one month or more in Cook County prison in Chicago, Illinois and found they had significantly lower rates of grade retention when they were compared to children of mothers who were jailed for one week or less. Additionally, she found that the child's academic achievement was not significantly impacted by maternal

incarceration (2009b). In a follow up study, she found that adolescents were are greater risk of school drop out during the years of their mother's incarceration, especially if the imprisoned mother lost guardianship (2010). These contradictory outcomes could be related to the choice of comparison group. Home disruption caused by any type of incarceration exists in both samples and therefore children of jailed mothers may not be an appropriate comparison group, as they are exposed to similar if not worse risks. Children of jailed mothers may also experience more frequent disruptions at home, and they may continue to live in situations where they are being exposed to criminal activity. However, consistent with Cho's results, a recent meta-analysis by Murray and Farrington (2012) that included unpublished manuscripts revealed that among statistically rigorous studies that controlled for covariates, there were no associations between parental incarceration and educational outcomes. Thus, there are conflicting findings on the impact of mass incarceration on youth's school experience.

To date, no study has examined the academic outcomes of youth affected by the incarceration of anyone beyond a biological parent. However, it is reasonable to hypothesize that that the incarceration of any household member will have an effect on the academic outcomes of children living within the household, based on the probability of greater economic strain and accumulated contextual risk associated with the population.

Economic strain. The incarceration of a household member may result in the loss of household income or the increase in household expenses as additional dependents enter into a household (Travis & Waul, 2003). The association between economic strain and academic achievement has been well documented (Sirin, 2005). In an examination

of early school drop out among tenth grade students, low socio-economic status was positively correlated with school dropout, over and above its effects on a child's academic achievement (Battin-Pearson, Newcomb, Abbott, Hill, Catalano & Hawkins, 2000). There are multiple explanations for this observed relationship. Older youth living in poverty may choose to drop out of school in order to work and help provide for their families. Increased economic strain has also been associated with increased distress and authoritarian and/or erratic parenting styles in caregivers, which in turn may affect children's performance and motivation in school settings (Gutman, McLoyd & Tokoyawa, 2005).

Accumulated contextual risk. Sameroff, Seifer, Baldwin & Baldwin (1993) suggest that multiple environmental risks, such as poverty, in a child's environment can lead to maladaptive behaviors including delinquency and school failure. This model of accumulated risk may be one explanation for the poor adjustment of youth with incarcerated parents (Dallaire, 2007a; Murray & Farrington, 2005), and can be applied to youth with incarcerated household members.

Families of prisoners frequently experience high rates of risk prior to incarceration, such as minority status, low income, drug exposure, crime, and mental illness (Dallaire, 2007a). As minority populations are overrepresented in the incarcerated population, the majority of children of with family members incarcerated are also likely minorities (Glaze & Maruschak, 2008). In 2007, Black children were seven and a half times, and Hispanic children were two and a half times, more likely than White children to have a parent incarcerated. About 35% of those in state prisons lived below the national poverty line before incarceration (Glaze & Maruschak, 2008). About 70% of

inmates who lived with their children prior to incarceration reported a history of substance abuse and about half (48%) of the incarcerated parents did not have their high school diploma or GED (Glaze & Maruschak, 2008). Rates of drug use, mental illness, history of abuse, and the likelihood of exposure to criminality in the home are similar for incarcerated parents and the general incarcerated population. Therefore, if an inmate was living in the youth's household, it is likely that the youth and the remaining household members experience similar accumulated contextual risk. In addition, if a parent allows an adult to live in the household with their children, while the adult is actively involved in crime and/or drug abuse, it is possible that the house is more disorganized then if the inmate was the parent.

In summary, multiple pathways determine the academic outcomes of youth, such as economic strain and the presence (or absence) of accumulated risk. Therefore, we will consider their influence on the relationship between various outcomes and household incarceration in our analyses and discussion of findings.

The Current Study

The purpose of our study was to evaluate the relationship between youth household incarceration and two academic outcomes: failure to graduate high school and extended school absence. Using the National Longitudinal Survey of Youth, Child and Youth survey (NLSY: Center for Human Resource Research, 2009), we employed hierarchical logistic procedures to evaluate the relationship while controlling for variables associated with economic strain and contextual risk (what is contextual risk). Secondary analyses measured the association between the youth's relationship to the incarcerated household member (e.g. parent, sibling, other household member) and academic

outcomes. We anticipated that household incarceration would relate to both school outcomes and that, consistent with previous literature, parental incarceration would be associated with the greatest levels of risk compared to sibling and other household member incarceration.

Method

Participants

Participants included women and their children surveyed through the NLSY. In the initial design, the Department of Labor Statistics used a multi-stage stratified area probability to collect a nationally representative sample of 12,686 men and women (aged 14 - 21 in 1979) from dwellings in the U.S., to follow throughout their lives, focusing on education, employment, training, and family experiences. In 1986 the survey was expanded to a new longitudinal study, which followed the offspring of female respondents to the initial survey (NLSY79). This survey was comprised of NLSY administrator observations, parent reports from the original female respondents (mothers), as well as self-reports from their children. Beginning in 1994, a separate Young Adult survey was created for offspring of female respondents once they turned 15, in order to biannually collect data relevant to entering adulthood. For the present study, data regarding child characteristics and behaviors came from the Young Adult (1995-2008) dataset and the Child (1986-2008) dataset, while variables on maternal characteristics came from the NLSY 1979 (1979-2008) dataset. Data from these three sets was merged using the unique Child and Mother identification codes. Data was obtained from the National Longitudinal Survey of Youth public access files (http://www.bls.gov/nls/nlsy79.html).

The sample for the present study consisted of 3,338 offspring of female NLSY79 participants. This subset of respondents was selected from an initial pool of 11,495 offspring but 5,298 were not followed into young adulthood (15 yrs and older), either due to dropout (n = 2,881) or because they were still under the age of 15 (n = 2,417). Another 2,786 participants were excluded because they did not answer the question on household incarceration (n = 2,760), or because they failed to give information regarding their age at the time of the household member's incarceration (n = 26). Participants who were born before 1989 were excluded because they had not had an opportunity to complete their education, and would have incomplete information on their academic history (n = 85). The final sample was 47% male. The average age was 26.5 years (SD = 3.36) at the time of the 2008 survey. Minorities were overrepresented in the sample, with about a fifth of the sample self-identified as Hispanic (22.7%) and a third identified as Black (38.9%). In the overall sample, 20% reported grade retention, 14% reported school drop out and 13% reported failing to graduate high school.

Out of the sample, 585 met criteria for the household incarceration status, to be compared to 2,753 individuals who did not experience household incarceration. Of the household incarceration group, 226 reported only parental incarceration (39% of the household incarceration group) 183 reported only sibling incarceration (31%), and 170 reported only other household member incarceration (18.6%). There were 64 participants who reported the incarceration of more than one type of family member (10.9%). Finally, 50 of the participants met the criteria for inclusion in household incarceration status, but did not report their specific relationship to the incarcerated household member and therefore were not included in the second set of analyses.

Measures

Household Incarceration Status. We identified the subsample of youth with a household member incarcerated (HMI) by four responses from the 2006 and 2008 young adult survey: (1) The youth responded positively to the question "Anyone living with the respondent gone to prison/jail since respondent was 10 years old?" (2) The youth reported their own age at the time of the incarceration of the HMI as based upon three separate items: (a) Age of Respondent (R) when household member was first imprisoned; (b) most recently imprisoned; (c) imprisoned; and (3) The incarceration occurred before the youth's eighteenth birthday. Only youth who completed all three of these questions were included. We indicated household incarceration with a single, dichotomous variable of household incarceration.

In order to examine patterns associated with particular household member relationships, we also created three independent variables that reflected whether or not individuals indicated experiencing the incarceration of a parent, sibling, or other family relation (e.g. uncle). Each variable was coded dichotomously. The three variables were independently coded, and it was possible for youth to endorse any combination of the three HMI relationships.

Demographic Information. We examined survey information regarding race, sex, socioeconomic status, and maternal education level as potential controls for education outcomes. Race was coded by the survey home interviewer who indicated whether the youth was or was not Black as well as whether the youth was or was not Hispanic. We estimated poverty status from participant reports of family participation in federal aid – either Medicaid or Federal food stamp programs for more than one year –

before the youth's eighteenth birthday. Mother's education was a dichotomous variable, based on mother report of high school graduation from the original NLSY79 dataset.

Cognitive Ability. Cognitive ability was estimated by the Peabody Picture Vocabulary Test Revised (PPVT-R) intelligence score (IQ). The PPVT-R was administered to children ages 3 to 15, to assess the child's hearing vocabulary of the English language using 175 vocabulary items of increasing difficulty. The administrator said the item, and the child selected one of four pictures that best represented the word. The PPVT-R provided an estimate of verbal ability using national age- based norms (M = 100, SD = 15*).* We included the last administration of the PPVT-R score to have the best estimate of the subjects' cognitive abilities entering high school. The PPVT-R is a widely used measure, which has extensive standardization (Dunn & Dunn, 1981), and a median correlation coefficient of 0.77 across reliability studies (Bochner, 1978).

Home Environment. We included two measures of childhood home environment quality, using scores from the Home Observation Measurement of the Environment (HOME-SF) (Caldwell & Bradley, 2003; Ferron, Ng'andu, & Garrett, 1994). HOME-SF is a measure of children's cognitive stimulation (HOME-C), emotional support (HOME-E) and overall quality of their home environment. The HOME-SF consists of 53 items, based on maternal report and trained NLSY interviewer observation. The survey provides an overall score for home quality, along with a subscale score for cognitive stimulation and emotional support. Although there were multiple answers for each survey item, NLSY recoded the HOME-SF to create dichotomous variables for each item in the NLSY database, and then created standardized norms for the survey population. The score percentiles were based on internal normalization procedures from

the NLSY sample. We included the most recent measure of the subject's emotional and cognitive standardized scores.

Academic Outcome: Extended Absence. School extended absence was measured by self-report on one question in the NLSY Young Adult survey (Has respondent ever dropped out of regular school for at least one month and returned?). Subjects who reported dropping out and returning after one month at least once on any of the surveys between 1992 and 2008 were coded positive for the dichotomous variable.

Academic Outcome: Failure to Graduate from HS. Failure to graduate high school was composed of two self-report questions on the NLSY young adult survey. Subjects were coded positive for the "Failure to graduate from HS" variable if they did not report receiving a high school diploma. Subjects who reported earning a GED, but did not endorse receiving a high school diploma, were coded as failing to graduate high school. About 18% (n = 628) of the sample did not specify whether they received their GED or high school diploma on the survey. These individuals were excluded from regression models regarding high school completion.

Plan of Analyses

Data was analyzed using IBM SPSS Complex Samples 19, a statistical software program that was designed for complex weighted sample designs. We utilized the custom weights in accordance with technical materials provided by NLSY (Center for Human Resource Research, 2009). Lifetime occurrence of extended absence, and failure to graduate high school was measured across all years of data collection (1994 - 2008), and corresponding weights were utilized for all analyses. Three models were run for each outcome. First a model with all the above-mentioned control variables was run. In

the second model, any household incarceration was added as a predictor variable. In the third model, any household incarceration variable was replaced with three relationship specific predictor variables: parental, sibling, and other household member incarceration. Chi square difference tests were calculated to compare the contribution of the incarceration models above and beyond the control model in predicting the school outcomes.

Results

A summary of key demographic and academic variables is provided in Table 2. For both academic measures, HMI youth had significantly worse academic outcomes in comparison to youth who did not have a household member incarcerated. However, the HMI group also differed significantly on key demographic variables that are associated with academic failure (see Table 2). In order to understand the specific role of household incarceration, we ran a series of hierarchical regression analyses controlling for IQ, SES, mother's education and cognitive and emotional quality ratings of the home environment (HOME-C & HOME-E).

Extended Absence. A series of weighted logistic regression analyses evaluated the relationship between household member incarcerations with youth self-reported extended absence for at least 30 days followed by a return to school. The combination of covariates was significant for the model of extended absence (Wald X^2 =139.92, df = 8, p < .001, Nagelkerke R^2 = .087). There was a significant positive relationship between youth self-reported extended absence and receiving federal aid (Wald X^2 = 39.66, df = 1, p < .001), and maternal failure to graduate from high school (Wald X^2 = 16.24, df = 1, p

< .001); and a significant negative relationship with HOME-C ratings (Wald X^2 = 6.41, *df* =1, p = .01),

A second weighted regression analysis included all of these previous predictors with the addition of the household incarceration variable. The addition of the household member incarceration variable significantly improved the model (X^2 diff (1)= 30.46, *p* = 0.001; Model Wald X^2 = 170.20, *df* = 9, *p* < .001, Nagelkerke R^2 = .10). Independent of the effect from covariates, there was a significant additional effect for having a household member incarcerated (Wald X^2 =16.77, *df* =1, *p* < .001). Youth who experienced at least one household member incarceration had a 1.9 fold increase in the odds of being absent from school for a period of 30 days or more and returning, compared to youth who did not have a household member incarcerated. See Table 3 for results.

A second series of logistic analyses evaluated whether particular types of relationships were uniquely related to extended absence from school. As expected from the previous model regarding incarceration of any household member, the combined model that evaluated each separate relationship was significant, (Wald X^2 = 168.93, *df* = 11, *p* < .001, Nagelkerke R^2 = .096,). There was a significant relationship between extended absence and other family member incarceration (Wald X^2 = 6.13, *df* = 1, *p* = .01; OR = 1.87), as well as a trend effect for parental incarceration (Wald X^2 = 3.47, *df* = 1, *p* = .06; OR = 1.49). Results are summarized in Table 4.

Failure to graduate high school. In order to examine the relationship between having a household member incarcerated and the failure to graduate high school, we ran a similar series of logistical regression analyses. The first model consisted of the same covariates from the previous regression analyses, and accounted for a significant portion

of the variance in failure to graduate high school (Wald X^2 =154.23, *df* = 8, *p* < .001, Nagelkerke R^2 = .113). There was a significant relationship between failure to graduate high school and sex (Wald X^2 = 13.61, *df* = 1, *p* < .001), Home-Cognitive Standard Score (Wald X^2 = 19.34, *p* < .001), maternal high school graduation (Wald X^2 = 4.85, *df* = 1, *p* = .03), and federal aid participation for more than one year (Wald X^2 = 57.03, *df* = 1, *p* < .001). The addition of the household member incarceration variable significantly improved the model (X^2 diff = 10.56, *p* <0.01; Model Wald X^2 = 164.79, *df* = 9, *p* <0.001, Nagelkerke R^2 = 0.12). Household member incarceration was significantly associated with failing to drop out from school, above and beyond the contribution of the control variables (Wald X^2 = 9.60, *df* = 1, *p* = 0.002). Youth who had a household member incarcerated had a 1.65 increase in the likelihood of failing to graduate high school.

As expected, the second block of analyses, which included the three types of familial relationships to incarcerated household members, was significantly associated with self report of failure to graduate (Wald X^2 = 169.30, *df* = 11, *p* <. 001; Nagelkerke R^2 = .121). Having an extended household member incarcerated was the only relationship significantly associated to the failure to graduate high school (Wald X^2 = 3.80, *p* = .01, OR = 1.98), and resulted in an almost 2- fold increase in the likelihood of failing.

Discussion

The present study demonstrated differences in educational outcomes between individuals who experienced household incarceration during their youth and those who did not. Overall, results are in line with previous patterns observed among children of

incarcerated individuals, that family incarceration is associated with poorer school outcomes (Sack et al, 1976; Stanton, 1980; Trice & Breuster, 2004; Murray & Farrington, 2008). The observed relationship between incarceration and extended school absence, and incarceration and failure to graduate high school held, even when controlling for a number of risk factors related to school failure.

Preliminary analyses revealed that children who grew up with an incarcerated household member were likely to experience considerably more adversity then the general population. Specifically, the household incarceration group reported significantly higher rates of poverty and lower rates of maternal education, home quality, and vocabulary skills. Taken together, these adversities create a picture of an economically strained household, with myriad interconnected risk factors. These multiple environmental risks often result in maladaptive behaviors, such as truancy and drop out, due to increased strain placed upon an individual during significant developmental periods (Sameroff et al., 1993). Therefore, for the present study we examined whether these adverse economic and social variables were sufficient to explain any observed school-related risk factors among youth with incarcerated household members, or if there was something unique about experiencing household member incarceration.

Our main analyses revealed that household incarceration accounted significantly for extended absence and failure to graduate high school, above and beyond factors commonly found among incarceration-affected families. Having a household member incarcerated doubled the odds of dropping out of school and returning within thirty days, and likewise doubled the odds for failure to graduate, even after controlling for such risks as estimated intelligence and economic strain. These trends are consistent with those

observed in smaller samples of children with incarcerated parents (Trice & Brewster, 2004; Murray & Farrington, 2008). This suggests that the risks observed previously in parent-centered research, might likely exist for adolescents with any household member incarcerated, which is a much larger percentage of the population.

Secondary analyses examined the outcomes associated with specific relationships to the incarcerated household member (parental incarceration, sibling incarceration, and extended family member incarnation). Consistent with Murray and Farrington's recent meta-analysis (2012), but contrary to the majority of previous literature, there was a lack of relationship between parental incarceration and either extended absence or the failure to graduate high school (Murray & Farrington, 2008; Stanton, 1980; Trice & Breuster, 2004). All three of these previous studies had significantly smaller sample sizes, controlled minimally for covariates, and were limited to a single geographic area. Cho's studies, examining a larger population of women in Chicago, had trends similar to our findings, in that maternal incarceration didn't significantly impact grade retention or academic achievement (2009; 2010). The differences observed by Murray & Farrington (2008) and Trice & Brewster (2004) might have been unique to the high risk populations, or the geographic location they chose to study.

It is also possible that removal of the parent in some cases may result in the child moving into a more stable household. Jaffee, Moffit, Caspi & Taylor (2003) suggest children adjust best when they spend as little time as possible with a parent involved in anti-social behaviors. Further, it is possible that while social services and school-based supports may provide forms of intervention for children with incarcerated parents, such

support is not available to the less visible victims of incarceration - those who have a sibling or extended family member removed from the home.

It must be noted however, that the selection procedures used for the NSLY study may have skewed the population in terms of the present questions regarding parental incarceration. The youth sample was drawn from children of mothers who had participated in the original NSLY survey. It is plausible that solicited survey youth whose own mothers were incarcerated may not have participated to the same degree as other solicited youth, as the key contact (the mother) may have been unavailable due to her own incarceration or transition issues particular to incarceration. Previous research has suggested that incarceration of a mother may be particularly disadvantageous to a child as it is more likely to result in transfers of custody and poor attachment patterns (Dallaire, 2007a; Dallaire, 2007b; Novero, Loper, & Warren, 2011; Poehlmann, 2005). For the current study, we noted a trend effect ($p = .07$) for parental incarceration and extended absence from school. Plausibly, if such unsurveyed high risk youth with incarcerated mothers were to be included, we may have detected a significant effect. Although the NLSY afforded the opportunity to examine the issue in a large national sample, it is possible that to look specifically at the effects of parental incarceration, the use of an alternative data set with more conventional selection procedures would be advantageous.

We found that children reporting the incarceration of "other" household members had the greatest chance of reporting a school dropout-return and failure to graduate from high school. Other household members included aunts, uncles, cousins, grandparents, and non-related household members such as family friends or romantic partners. It is

plausible that the presence of a criminally involved extended family member in the home is an indication of an unstable home environment. Academic outcomes may be particularly sensitive to the household instability, as the structures needed to ensure that students regularly attend school, do homework, and engage in academic work may be lacking. Unlike the context for parental incarceration, the removal of a household member such as an aunt or cousin would likely provide minimal change in the unstable environment and parenting skills. If anything, there could be an increased strain on the caregiver and the children as the loss of an extended household member rarely qualifies the family for increased federal aid, social assistance, or school services. The child would remain in the disruptive environment that was originally open to the addition of delinquent individuals to the household, continue to be exposed to anti-social behaviors (Jaffee, Moffit, Caspi & Taylor, 2003), but likely receive little or no specialized support for dealing with home disruptions that undermine academic objectives.

Limitations

The purpose of this study was to determine whether the incarceration of a household member has a significant association with a youth's academic outcomes. The application however, was limited by the nature of the data. All of the outcome data was self-report, and therefore there is a possibility that participants minimized their school failures or exaggerated their achievements. It is also possible that youth were misinformed about the nature of a household member's absence, and therefore did not correctly report on the relationship of the incarcerated individual, or how old they were when the incarceration occurred.

Although the present study demonstrated a linkage between household incarceration and school failure, we were not able to directly support a causal model. As participants did not consistently report the earliest age of incarceration, it was impossible to control for academic and household data prior to the household member's incarceration without drastically reducing our sample size. We were also unable to determine whether the difficulty in academics, specifically grade retention and extended absence, occurred before or after the household member was incarcerated.

It is important to note that nearly 19% of the sample did not respond to the graduate high school item, potentially undermining the value of the variable for the secondary analyses regarding specific relationships. Further research, possibly with other large-scale, nationally representative samples, would be useful to clarify this issue. It would be useful to determine whether services that are already in place are productively protecting youth from school failure, and whether these interventions can be applied to youth with siblings and other household members in jail, whose unique risks are discussed below.

Further, as the data was collected between 1994 and 2008, there is up to a 15-year age difference between the participants, which resulted in uncontrolled historical, political and cultural differences in the different age cohorts that could influence an individual's school experiences. However, any differences caused by age were minimized by the large sample size and representation of age groups. The selection features of the NLSY study were another consideration. The participants were only recruited from the children of mothers who participated in the initial NLSY 1979 study. If the dataset also included children of male NLSY 1979 participants, it would have been

possible to conduct a separate, and more thorough control model for parental characteristics when looking at educational outcomes. All of these limitations should be kept in mind while considering the implications of our results.

Conclusion

The incarceration of at least one household member relates to youth's school experiences. The negative impact of incarceration is not limited to parents, and both research and services need to be extended to all youth living in the households of those imprisoned. Future studies should focus on identifying a national sample of families at risk for having a household member incarcerated and following them longitudinally from kindergarten through adulthood, with special emphasis on capturing family, community, and school characteristics. Researchers should explore interactions between family and school experiences of youth, to determine mediating influences of school success or failure.

Recently, there has been increased national focus on children with incarcerated parents. Neither new services, such as the Mentoring Children of Prisoners program, which was funded by the Department of Health and Human Services (2003-2011), or federal reports, such as the Justice Center 's Action Plan for federal policy (Nickel, Garland & Kane, 2009), address the need to assist children who have a non-parental family member incarcerated. Also, although the importance of coordinating services is addressed, there is no mention of changes that should be made within the school system. Awareness of behavior and school-related risks associated with the incarceration of family members should be increased through in-service trainings. Prevention programs and additional academic support should be made available to these students, as they are at

a higher risk for academic difficulties. Future studies will hopefully provide greater detail on how youth with incarcerated household members' experiences differ from their peers, and give more specific direction to opportunities for intervention.

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Table 1. *Weighted Sample Demographic and School Outcome Characteristics*

	Household Member Incarcerated?		
	Yes (Weighted n =1,313,615)	*No (Weighted n =6,447,737)*	
Dichotomous Variables	*%*		X^2 (*df*)
Sex (Male)	43.0	49.1	7.10 (3337)*
Ethnicity			
African American	30.2	26.4	3.424 (3337)
Hispanic	12.5	10.4	2.15 (3337)
Receive Federal Aid (1 yr +)	43.4	24.1	87.73 (3337)***
Maternal Education	75.5	83.6	20.83 (3337)***
School Outcomes			
Extended Absence	21.2	10.7	47.84 (3337)***
Failure to Graduate HS	24.9	13.0	29.5 (3337)***
Continuous Variables	*M (SD)*		*t* (*df*)
HOME (Cognitive)	92.3 (15.8)	95.8 (16.1)	5.92 (3308) ***
HOME (Emotion)	94.0 (16.2)	96.9 (16.4)	4.09 (3300) ***
PPVT (Standard Score)	86.6 (18.9)	89.9 (19.1)	3.68 (3279)***

Note: HMI = Household Member Incarcerated. Maternal Education = Mother endorsing obtaining High School degree or GED. Extended absence = Youth endorsing dropping out of school for a period of 30 days or more, and returning, at least once during school career. PPVT = *Peabody Picture Vocabulary Test*; higher scores indicate greater vocabulary skills. HOME (Cognitive) = *Home Observation Measurement of the Environment*: Cognitive Stimulation Standardized Score; higher scores indicate greater cognitive stimulation. HOME (Emotion)= *Home Observation Measurement of the Environment Standardized:* Emotional Support Standardized Score; higher scores indicate greater emotional support.
* $p < .05$ ** $p < .01$ *** $p < .001$

Table 2. *Final Logistical Regression of NLSY Youth Demographic Characteristics and Household Member Incarceration on Self-Report of Academic Outcomes*

	Extended Absence (Weighted *n* =7,761,352)	*Failure to Graduate* (Weighted *n* = 6,438,397)
	Odds Ratio (95% CI)	Odds Ratio (95% CI)
Sex (Male)	1.12 (0.87-1.45)	1.65(1.27-2.14) ***
African American	0.77 (0.57 - 1.04)	0.89 (0.65-1.21)
Hispanic	1.29 (0.95-1.76)	1.02 (0.73-1.44)
PPVT[a]	1.06 (0.93-1.22)	1.00 (0.87 -1.16)
Federal Aid 1 yr+	2.20 (1.66-2.91)***	2.84 (2.11-3.79)***
HOME-E[a]	1.10 (0.99 - 1.24)	1.12 (0.99-1.28)
HOME-C[a]	1.17 (1.03 - 1.33)**	1.3 (1.17-1.53)***
Maternal Education	1.74 (1.32-2.28)***	1.43 (1.04-1.97)**
Household Member Incarceration	**1.87 (1.38-2.52)*** **	**1.65 (1.20-2.27)** **
Pseudo Nagelkerke R^2	0.10***	0.12**

Note: HMI = Household Member Incarcerated. Maternal Education = Mother endorsing obtaining High School degree or GED. Extended absence = Youth endorsing dropping out of school for a period of 30 days or more, and returning, at least once during school career. PPVT = *Peabody Picture Vocabulary Test*; higher scores indicate greater vocabulary skills. HOME (Cognitive) = *Home Observation Measurement of the Environment*: Cognitive Stimulation Standardized Score; higher scores indicate greater cognitive stimulation. HOME (Emotion)= *Home Observation Measurement of the Environment Standardized:* Emotional Support Standardized Score; higher scores indicate greater emotional support.

[a] Odds rations for continuous variables based on the standard deviation of each score within the dataset. Value increments as follows: PPVT = 19 points; HOME-E = 16 points; HOME-C = 16 points.

*p < .05 **p <.01 ***p < .001

Table 3. *Logistical Regression of Parental, Sibling, and Other Household Member Incarceration on Self-Report of Academic Outcomes*

	Extended Absence (Weighted *n* =7,761,352)	*Failure to Graduate* (Weighted *n* = 6,438,397)
	Odds Ratio (95% CI)	Odds Ratio (95% CI)
Parent Incarceration	1.51 (0.98-2.34)[a]	0.80 (0.46-1.39)
Sibling Incarceration	1.41 (0.81-2.50)	1.63 (0.96-2.78)[a]
Other Household Member Incarceration	1.88 (1.14-3.11)**	1.98 (1.15 - 3.31)*
Pseudo Nagelkerke R^2	0.10***	0.12***

Note: The same covariates as provided in Table 2 were initially entered in this model. See Table 2 for details on the covariates.
[a] Observed trend effect $p < .10$
*$p < .05$ **$p < .01$ ***$p < .001$

Appendix 1.A: Description of National Longitudinal Survey of Youth (NLSY) Variables

Variables	**Survey Question**	**NLSY Survey (YA/Child/1979)**	**Years Collected**
Household Incarceration Variables			
Incarcerated household member	Since you were ten years old, has an adult member of your household (other than yourself), that is someone who was living in the same household as you at the time, been sent to jail or prison?	NLSY Young Adult (YA)	2006 & 2008
Relation to Youth	How was the person who went to jail or prison related to you? (Select all that apply.)	NLSY YA	2006 & 2008
Parent Incarcerated	Mother	NLSY YA	2006 & 2008
	Father	NLSY YA	2006 & 2008
	Stepmother	NLSY YA	2006 & 2008
	Stepfather	NLSY YA	2006 & 2008
Sibling Incarcerated	Brother	NLSY YA	2006 & 2008
	Sister	NLSY YA	2006 & 2008
Other household member	Grandmother (mothers side)	NLSY YA	2006 & 2008
	Grandfather (mother's side)	NLSY YA	2006 & 2008
	Grandmother (father's side)	NLSY YA	2006 & 2008
	Grandfather (mother's side)	NLSY YA	2006 & 2008
	Aunt	NLSY YA	2006 & 2008
	Uncle	NLSY YA	2006 & 2008
	Cousin	NLSY YA	2006 & 2008
	Other relative	NLSY YA	2006 & 2008
	Other non-relative	NLSY YA	2006 & 2008
Age at Incarceration (Compiled information from 3 questions)	(1) How old were you the first time [relationship to R]([loop number]) was sent to jail or prison (while you living were in the same household)	NLSY YA	2006 & 2008

	(2) How old were you the most recent time [relationship to R]([loop number]) was sent to jail or prison (while you living were in the same household)?	NLSY YA	2006 & 2008
	(3) How old were you when [relationship to R]([loop number]) was sent to jail or prison?	NLSY YA	2006 & 2008
School Outcomes			
Extended Absence	Did you drop out of regular school for at least one month and then return?	NLSY YA	1994-2008
Failure to Graduate High School (Compiled from 2 questions; GED = failing to graduated high school)	(1) Do you have a high school diploma or have you ever passed a high school equivalency or G.E.D test	NLSY YA	1994-2008
	(2)Which do you have, a high school diploma or G.E.D?	NLSY YA	1994-2008
Control Variables			
Poverty / Gov't Assistance (Compiled from 2 questions; yes to either = 1)	(1) There is a national program called Medicaid or Medi-Cal/Medical Assistance/Welfare/Medical Services) that pays for health care for persons in need. Is your health care now covered by Medicaid or one of these public assistance health care programs?	NLSY YA	1994-2008
	(2) Have you received government food stamps in any month since **Year of survey**?	NLSY YA	1994-2008
Sex	Sex of Child (1: Male 2: Female)	NLSY Child/YA	All waves
Ethnicity	Race of child (Mother's racial/ethnic cohort from screener) 1: Hispanic; 2: Black; 3 Non-Hispanic/NonBlack *Recoded into 2 dichotomous variables*	NLSY Child/YA	All waves

Recoded Hispanic	*Recoded* . Hispanic (1) = 1; Black (2) & Non Hispanic/NonBlack (3) = 0	*Recode*	

Recoded Black	*Recoded* Black (2) = 1 ; Hispanic (1) & NonHispanic/NonBlack (3) = 0	*Recode*	
Peabody Picture Vocabulary Test	Peabody Picture Vocabulary Test-Revised Form Long (PPVT): Total Standard Score	NLSY Child	1986 - 2008
Home Observation Measurement of the Environment Short Form: Cognitive Stimulation	HOME Inventory: Cognitive Stimulation Standard Score	NLSY Child	1986 - 2008
Home Observation Measurement of the Environment Short Form: Emotional Support	HOME Inventory: Emotional Support Standard Score	NLSY Child	1986 - 2008
Mother's Educational Attainment	Do you have a high school diploma or have you ever passed a high school equivalency or GED test?	NLSY 1979	1979 - 2008

Evaluating the Content and Reception of Video-Taped Messages from Incarcerated Parents to Their Children

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Abstract

In the current study, children's reactions to video-taped messages from their incarcerated parents were evaluated. Previous research has shown that contact between children and their incarcerated parents can lead to beneficial outcomes for both the child and parent, but this is the first study to examine the actual content and quality of a remote form of contact in this population. Participants included 186 incarcerated parents (54% mothers) who participated in a filming with The Messages Project and 61 caregivers of their children. Parental mood prior to filming the message and children's mood after viewing the message was assessed using the Positive and Negative Affect Scale. After coding the content of 172 videos, the data from the 61 videos with caregiver responses were used in subsequent path analyses. Analyses indicated that when parents were in more negative moods prior to filming their message, they displayed more negative emotions in the video messages ($\beta = .210$), and their children were in more negative moods after viewing the message ($\beta = .288$). Considering that displays of negative emotion can directly affect how children respond to contact, it seems important for parents to learn to regulate these emotional displays to improve the quality of their contact with their children.

This study examined both the content and quality of a unique form of parent-child communication (video-taped messages), and factors that contribute to how children react to the message in a sample of children with incarcerated parents. In conjunction with the Messages Project, we evaluated the quality and affective content of the video-taped messages incarcerated parents sent to their children, and examined the content in relation to children's emotional reaction to watching the taped message, and their likelihood to watch the tape multiple times. We specifically examined the content of videos for qualities of positive interactions, including warmth, expressions of love, and appreciation; taped messages were also coded for expressions of negative emotion, including crying, anger, and anxiety. In addition, the current study investigated how participation in parenting education programs and parental mood immediately prior to recording a video message related to the content and quality of the messages.

Contact between Incarcerated Parents and their Children

More than 75% of the nearly 809,800 incarcerated parents being held in the nation's prisons at midyear 2007 reported having some form of contact with their children during the time of their incarceration (Glaze & Maruschak, 2008). Maintaining contact during this time is a key issue for many children, parents, and caregivers impacted by parental incarceration (see Poehlmann, Dallaire, Loper & Shear, 2010 for a review of this literature). Traditional forms of contact, including visitation, phone calls, and letter-writing, as well as more technologically advanced and emerging contact opportunities (e.g., video conferencing, sending audio or video-taped messages) offer distinct opportunities for incarcerated parents and their family to maintain and rebuild

connections. However, all of these forms of communication have unique obstacles that must be overcome for contact to result into a meaningful, positive experience for parents and children.

Visitation. Physical visitations allow parents and children to see each other in person, even if they are not permitted to have physical contact with each other. Unfortunately, most state and federal prisons are located more than 100 miles from where an offender's family lives (Poehlmann, et al., 2010). Visitation requires both time and money - resources that may be limited for many caregivers of prisoner's children. However, in addition to being costly, visitation experiences are often not child-friendly. Traditional visitation may include long waits in uncomfortable visiting rooms and invasive security procedures (Arditti, 2003; Tewksbury & DeMichele, 2005). The amount of physical contact provided by visitation may also be limited. Although many federal prison facilities allow physical contact during the course of a visit, most local and regional jail facilities do not (Poehlmann et al., 2010). As such, visits often occur through plexiglass barriers, which can be confusing to children who cannot understand why they cannot touch their parents or be held by them. The time and expense involved with bringing children to a jail or prison facility, the sometimes invasive security procedures, and lack of, or limited amount of physical contact that is allowed may discourage some from visiting their incarcerated loved one.

Phone Calls. Phone calls allow a conversation between parents and children of most ages from the safety and comfort of the child's home. Children can hear their parent's voices without going through the potentially negative experience of visitation. It also requires less of a time and financial commitment from the prisoner's family.

However, this form of contact does not allow non-verbal communication, making it difficult for parents to read emotional cues sent by their children and vice-versa. Prisoner initiated phone calls are extremely expensive as well because correctional facilities typically require prisoners to call caregivers and children collect (Christian, Mellow & Thomas, 2006). Due to this cost, caregivers may not be willing to accept many, if any, phone calls from incarcerated parents.

Letters. Letter writing creates temporal and emotional distance, allowing both parents and children time to reflect on information and consider their responses. This in turn allows more opportunity for less emotionally reactive responses (Tuerk & Loper, 2006). Letter writing also provides an opportunity for more private communication, and more personalized messages to multiple children. Often with visitation and phone calls, the time limit and cost makes it necessary for parents to focus on everyone at once, or just one family member. Letter writing is the cheapest form of contact for prisoners, and there is less of a restriction on the frequency or length of communication. However, letter writing does not allow direct communication or problem solving. It is a one sided conversation, and there is no guarantee that the child will respond to the parent's letter. Letter writing is also limited to children who are old enough to read.

Emerging Technologies and Remote forms of Contact. New opportunities to have contact with children have emerged, as correctional departments and volunteer programs have adapted more technologically advanced modes of communication. One example is the Storybook Project, which allows incarcerated parents to audio record themselves reading bedtime stories to their children. The tape and storybook are sent to the children and children to listen the story read by their parent during the parent’s

incarceration. A qualitative study of incarcerated mothers in Iowa reported that mothers found the program helped to strengthen their relationship with their children, and mothers felt that it allowed them to practice their parenting skills (Trost, 2009). This type of communication allows children to hear their parent's voice whenever they want to and to have a transitional object during the separation.

Video visitation, in which family members can talk to inmates using a computer based communication system, is quickly becoming a preferred form of contact (Dallaire, Poehlmann, & Loper, 2011). The family goes to the nearest institution-approved communication center, which is usually located in a community center or church, to use secure computer equipment to both talk to and see the inmate. This practice was adapted from other forms of telecommunication that were already occurring in correctional facilities - such as telemedicine and jail-to-courtroom communication (Gramlich, 2009). One of the many benefits of telecommunication is that is saves money for everyone involved. Caregivers are saved expenses associated with travel and phone calls, and the institution spends less on security personnel for onsite visitation. Additionally, children and parents get to talk to one another face to face, in a private and more child friendly environment. Although there cannot be physical contact, the child also does not have to go through the stressful and sometimes invasive security required for onsite visitation. Currently, this form of communication is so new that little is known about how children or parents react to it or the potential positive or negative outcomes.

Although less interactive than video-conferencing, video-taped messages allow children to both hear and see their parents. One project that allows incarcerated parents to connect with their families through video-messages is The Messages Project

(http://themessagesproject.org/index.html). This program allows incarcerated parents to send personal, video-taped messages to their children. The program was founded in Virginia and has extended to other states, including California, Missouri and Nebraska. Inmates are given 15 minutes to record a message to their children, and are provided with colorful backgrounds, books to read, and props to make their message more child-friendly.

These technological advances have made it possible for parents and children to see one another while not having to deal with the challenges of going to the correctional facilities; they also give researchers an opportunity to examine the content and quality of the parent-child contact. Video-taped messages in particular, allow researchers an opportunity to evaluate the quality and emotional content of the contact in ways that are nearly impossible using traditional modes of live contact or even teleconferencing technologies. The current study is one of the first to examine children's reactions to a remote form of contact in relation to the quality and emotional content contained within the taped message. Though the content and quality of letters can be examined, video-taped messages allow researchers to examine non-verbal emotional cues (e.g., body language, tone of voice). In the current study we examined features of taped messages that characterize high-quality interactions which we operationally define as presence of positive interaction qualities (e.g., telling a child that they love them, expressing gratitude/appreciation, expressing interest in the child and his/her activities) and the lack of expression of negative emotionality (e.g., expressions of anger, sadness, anxiety). By the examining the content and quality of contact we may be better able to predict how children will react to the contact.

Reactions to Contact by Children and Parents

Numerous studies have attempted to examine children's reaction to contact with their imprisoned parents, and what factors promote positive outcomes, with mixed results. Both Dallaire, Ciccone, and Wilson (in press) and Poehlmann (2005) measured children's attachment representations in relation to frequency of visitation with their incarcerated parent. They both found associations between frequency of visitation and insecure attachment representations. Landreth and Lobaugh (1998) conducted an enhanced-visitation intervention for 16 incarcerated fathers and their children (4-9 years old), to see if a child-friendly visitation environment would improve children's reactions to contact. Although they observed that children in the intervention group had higher self esteem, too many participants dropped out of the study to determine whether the increase was significant compared to the control group.

Other findings indicate that contact can be beneficial. For example, Trice and Brewster (2004) studied school age children with incarcerated mothers, and found that more frequent contact (visits, phone calls, letters) was associated with lower rates of school drop outs and suspensions. Shlalfer and Poehlmann (2010) surveyed 57 child participants in a mentoring program for children of incarcerated parents about their experiences with visitation and contact with the incarcerated parent. All of the 24 children who reported having no contact with their parents, also reported feeling alienated from their incarcerated parents. Dallaire, Ciccone and Wilson (2010) reported that teachers observed improved behavior in the classroom when children received a letter from their incarcerated parent.

Unfortunately, the literature looking at the effect of visitation and contact with an incarcerated parent on child outcomes is limited by the small, unrepresentative nature of the samples. Furthermore, there is virtually no information about the quality of such contact. This omission from the research literature may help explain some of the mixed results that have been obtained.

Similarly mixed results have been obtained when looking at parent's reactions to contact. Bales and Mears (2008) found that increased child visitation was associated with increased recidivism using administrative data from the Florida Department of Corrections. Acevedo, Bakken, and Karle (2004), surveyed 158 released female prisoners, and found that mothers who had child visitations were more likely to engage in violent and/or serious infractions while incarcerated, than those who weren't visited by children. However, when looking at mail contact in particular, Loper, Carlson, Levitt, and Scheffel (2009) interviewed 211 incarcerated parents and found that greater mail contact was associated with lower parenting stress.

Taken together, these mixed findings indicate that factors that mediate the relation between contact and outcomes should be examined. A key mediator and the focus of the current investigation is the quality of such contact. Previous research has almost exclusively focused on quantity of contact or lack of contact between children and their incarcerated parent, with little attention to characteristics that may contribute to high-quality contact between parent and child.

Factors that Mediate Children's Reactions to Contact with their Incarcerated Parent

A number of factors, including caregiver factors, parent-child cohabitation/co-residence, parent gender, and the quality of parent-child contact may influence the impact of contact on child and parent outcomes. Caregivers are important in arranging opportunities for incarcerated parents and their children to have contact, they dictate the frequency of visits, phone calls, and visitation for most children. They have to consider practical concerns about what is best for the children, as well as their own feelings towards the parent (Shlafer & Poehlmann, 2010). Caregivers are needed to provide emotional support to children as they go through the visitation process, as well as help them process the experience afterwards (Poehlmann, et al., 2010). Therefore the relationship between the caregiver and the parent plays a large role in not only the frequency of contact, but how the child experiences and processes parent-child contact and may to some extent determine the effects of contact on child outcomes.

Quality of parent-caregiver relationships prior to incarceration may determine the level of contact during the separation, and has also been associated with familial relationship quality post-release. Parents who have more consistent, positive relationships with the child's caregiver have more frequent communication with their children through mail and phone calls (Tuerk & Loper, 2006). Evidence suggests that positive family relationships combined with visits from partners leads to higher post-release parent-child relationship quality (LaVigne, Naser, Brooks, & Castro, 2005). However, when there were lower levels of family relationship quality before incarceration, visits from partners predicted even lower levels of quality following release.

Effects of contact as well as frequency of contact may also be influenced by parent gender and whether or not the parent and child lived together before the current

incarceration. It is a different experience for both parent and child when the incarcerated parent lived with the child prior to their incarceration. Mothers are more likely to live with their child prior to incarceration (60%) compared to fathers (42%) (Glaze & Maruschak, 2008). Additionally, fathers are less likely to have contact with their children than mothers while in state prisons (Maruschak, Glaze & Mumula, 2010).

The focus of the current study is on the role of quality of contact on children's reactions to that contact. In order for contact to be beneficial for the child, the interaction should include opportunities for the parent to reinforce their connection with the child and family members, and establish and maintain a positive mood during the interaction (Henggeler, Schoenwald, Borduin, Rowland & Cunningham, 2009). Although incarcerated parents may not be actively participating in the structure and discipline in their children's life, they can demonstrate healthy involvement by inquiring about various aspects of their child's life. Quality interactions would not include blaming, shaming or any other negative expression that may damage the parent-child connection or suggest that the parent is unsafe. Both parent and child factors contribute to the quality of contact, but ultimately, the parents' knowledge of how to positively interact with their children in an age-appropriate and meaningful way may be one of the most influential factors. Even though incarcerated parents miss out on "in-the-trenches" parenting for a certain period of time, this does not mean they are unable to be involved in their children's daily lives; contact makes it possible for them to stay actively involved provided they have the skills to establish and maintain harmonious interactions. Furthermore, because many institutions offer parenting classes to inmates, incarcerated parents may use this time to increase their knowledge about positive parenting behaviors.

Parenting Classes for Incarcerated Parents

Incarceration can provide an opportunity for parents to learn techniques to improve their parenting abilities and to better manage their emotions when faced with parenting challenges. Currently many institutions in the United States offer some type of parenting training for prisoners. However, there is considerable variability in the content of such programs, and most do not include an interactional component for parents to practice their newly learned or refined skills (Loper & Novero, 2010; Sandifer, 2008). A recent survey of national parenting programs found that parenting classes that do not directly involve children were offered in 51% of male facilities, 90% of female facilities, and 74% of coed facilities (Hoffman, Byrd, & Kightlinger, 2010). In contrast, programs involving children were offered in 10% of male, 33% of female, and 15% of coed facilities. When children are not directly involved in the program, parents may not have the opportunity to practice their newly learned skills and practice emotion management techniques. Consequently, the positive effects intended from such programs may not be realized. Because improving parent-child relationship quality is one of the major goals of a parenting intervention, this finding stresses the importance of contact during periods of incarceration.

Evaluations of participants in the Parenting from Prison (PFP) program revealed that mothers who had no contact with their children exhibited lower levels of self-esteem than mothers who had a least some visits with their children or had frequent letter exchanges (Thompson & Harm, 2000). Mothers who did not receive any visit from their children reported clinically significant low levels of self-esteem, even after completing PFP (Thompson & Harm, 2000). In contrast, mothers whose children visited reported an

increase in the frequency of visits and improvement in the quality of both in person interactions and letter writing. Mothers who had frequent visits showed the greatest improvement in parenting knowledge, especially compared to those who had little or no contact with their children, and therefore did not have the opportunity to practice the learned skills or learn from nurturing experiences.

A review of literature on parenting classes for prisoners by Loper and Novero (2010) found that while most studies document an increase in parenting knowledge, and sometimes a decrease in parenting stress, no studies to date document whether the parenting class results in a change in the prisoner's actual parenting abilities or behavior. We expect parents in the current study who have taken a parenting class while incarcerated will send their children higher quality video-taped messages characterized by more positive interaction qualities (e.g., warmth, appreciation) and fewer negative emotional displays.

Current Project

In this study, we examine the emotional content and quality of incarcerated parents' video-taped messages sent to their children in relation to children's reactions to the taped message. We also examine potential influences on the content of the parent's message, specifically self-report of parent mood and completion of a parenting class.

In regards to the child's reaction to the video message we expect:

i.) Children will react more positively (e.g., watch the tape more frequently, be in more positive and less negative moods after viewing the tape) when parents send tapes characterized by positive interaction qualities, including by warmth, expressions of love and appreciation.

ii.) Children will react negatively (e.g., watch the tape less frequently, be in less positive, more negative moods) when parents send tapes characterized with displays negative emotions (e.g., crying, anxiety, anger).

iii.) We do not expect parents' mood before filming the message and children's reactions to the message to be directly correlated, however, we expect this relation to be mediated by the content and quality of the taped message.

In regards to the influence of completion of a parenting class on the content of parent's video-taped messages, we expect:

iv.) Parents who completed parenting programs would send higher-quality messages characterized by positive interaction qualities (e.g., warmth, appreciation) and fewer negative emotional displays.

v.) Parents who completed parenting education programs would report being in more positive and less negative moods prior to the filming of their taped message.

vi.) We do not expect completion of a parenting class and children's reaction to the taped message to be directly correlated, however, we expect this relation to be mediated by the content and quality of the taped message.

Method

Participants

Participants included 186 parents (56% female) incarcerated in the state of Virginia. Thirty-six participants were incarcerated at a regional jail facility (19.35%) and 150 at a Department of Corrections Facility (80.64%). Seventy-seven parents reported that this was their first incarceration, of the 109 incarcerated parent participants (IPP) who reported having been previously incarcerated, the number of previous sentences ranged

from 1-10, (M = 3.41, SD = 1.68). The majority of IPP (60.2%) reported living with their children prior to their sentencing. See Table 1 for demographic characteristics of incarcerated parents.

Sixty-one caregivers participated by completing questionnaires mailed to their homes. Demographic characteristics of caregiver participants (CP) can be seen in Table 2. Caregivers had various relationships with the incarcerated parent and the child to whom the message was sent including: children's mother (11.48%), grandmother (29.51%), grandfather (1.64%), aunt (4.92%), great grandmother (3.28%), great grandfather (1.64%), friends of their parents (9.84%), cousin (1.64%), and other adults (36.07%). The other adult caregivers included relatives from the parent's prior marriages (i.e., ex-mother-in-law, ex-husband), the children's siblings, step-parents, the parent's current significant other, and one foster parent.

Caregivers answered questions about themselves and the child to whom the message was sent. If the parent had multiple children, caregivers were asked to complete the questions for the child whose birthday comes first in the year. Based on caregivers' reports, children's mean age was 7.60 (SD = 3.95) and 47.37% were male.

Procedure

After human subjects approval was obtained from Institutional Review Boards at the two participating institutions, approval was also received from the Virginia Department of Corrections (DOC) and the regional jail for the research to be conducted at these facilities. Parents were selected and recruited by programs staff at each facility using the following criteria: inmates had a child under the age of 18,they were considered in good standing because of their good behavior, and had never been accused of child

abuse or neglect. Taping of the messages and completion of the research protocol occurred between November 2009 and December 2010. Staff members from The Messages Project were present at all tapings, along with the authors and trained graduate and undergraduate research assistants. Parents were explicitly told that they could participate in the Messages Project and not participate in the research portion of the project. Overall, 85% of individuals who participated in the Messages tapings participated in some aspect of the research portion of the project.

After completing the informed consent granting permission for self to participate by completing questionnaires, IPP were asked to sign two additional permission forms to allow researchers to copy their message and to contact the adult to whom the message was sent. IPP completed all questionnaires prior to making their message and then completed a brief interview after the taping. IPP could agree to one portion of the research without agreeing to the others (e.g., having their message copied, but not contacting the caregiver). Permission to contact CP was granted by 82.8% of IPP and 94% agreed to have their message copied (and subsequently coded).

Typically 1- 2 weeks elapsed from the time the parent made the taped message to the time the tape was sent in the mail to the family as we had to copy the tape and prepare the questionnaire package. Along with the taped message, questionnaires were sent to the 154 CP of the IPP who agreed to allow us to send the CP questionnaires. If the CP did not return the questionnaire after 1-month, a second set of questionnaires was sent. Of the 154 questionnaires that were sent out, 61 (40%) were returned. CP received a $10 gift card for their participation.

Measures

IPP and CP completed a demographic questionnaire regarding their age, ethnicity, education, information about the children, and children's parents' history of incarceration. Both IPP and CP were asked to report who the child currently lives with, if the parent lived with their child prior to the current incarceration, and how involved the IPP was in the child's daily lives prior to their incarceration. CP and IPP were also asked about the frequency of the parents' contact with their children during the incarceration through visitation, phone calls, and mail communication.

Frequency of Contact with the IPP. IPP and CP were asked to report how frequently the parent and child were in contact during the last month and during the last year via mail, phone and physical visitation. Respondents rated how frequently the parent and child were in contact using a 10 point scale with 0 = never and 10 = daily. Aggregate scores were used to create four total contact variables: CP report of monthly contact, CP report of yearly contact, IPP report of monthly contact, and IPP report of yearly contact. These reports were significantly positively correlated (*r*s ranged from .62 - .74). IPPs' reports of monthly and yearly contact were higher than CPs' reports of contact. Paired sample t-tests showed no significant differences in IPP and CP reports of monthly contact, but that IPPs reported significantly more yearly contact than did CPs, t (19) = 3.5, p = .003.

Parenting Class. IPP reported whether or not they had ever, or were currently taking a parenting class. They were asked the name of the class and how long it lasted, and to provide a brief description of the program. Due to the diverse nature of IPP's program experiences, responses were coded into "yes" or "no" based on whether they

reported having ever taken a parenting class. Responses indicating that the course was primarily focused on addictions counseling (e.g., AA or NA) were not counted as being a parenting class. Of the 182 IPP who answered this question, 87 (52.2%) responses were coded as "yes" they had taken a parenting class.

Parent and Child Mood. All participants completed the Positive Affect and Negative Affect Survey (PANAS; Watson, Clark, & Tellegen, 1988). This 20-item questionnaire was used to assess current mood, including the extent to which the parents and children were feeling 10 positive emotional states (e.g., attentive, proud, inspired) and 10 negative emotional states (e.g., distressed, hostile, scared). IPP completed the PANAS immediately prior to taping their message. CP completed the PANAS about the child who had just watched the taped message. IPP rated the extent to which they were currently feeling each emotional state on a 5-point scale (1 = *not at all*; 5 = *extremely*), and CP did the same for the child. Previous research has utilized parent report of child affect with this measure (i.e., Lonigan, Driscoll, & Hooe, 2002). There is support for the reliability and validity of the same affect items in the parent-report version as in the self-report version. Overall, findings show that there is higher agreement on reports of positive affect, since it may be more easily observable. The PANAS scale has high scale and item validity, and the intercorrelations and internal consistency reliabilities are all acceptably high (ranging from 0.86 to 0.90 for Positive Affect (PA) and .84 to .87 for Negative Affect (NA); Watson, et al., 1988). In the current sample, Alpha reliability ranged from .85 (parent) to .91 (caregiver) for PA and .84 (parent) to .91 (caregiver) for NA. PA and NA scale scores were created for all IPP and children. In addition to PA and

NA scale scores, an overall mood score was calculated by subtracting the NA scale score from the PA scale score.

Quality of Video Message. The messages of IPP who agreed to have their taped video messages copied were coded by four graduate student researchers at the participating institutions. A coding scheme was developed to quantify the quality, verbal, and affective content of the IPP video-taped messages. The coding scheme was designed to capture themes of positive and negative interaction qualities. In particular, we identified occasions when the inmate expressed positive or negative attitudes toward the child, the caregiver, the institution, or themselves. We also captured references made to inmates' desires for active involvement with the child. We initially focused on 32 behaviors that we believed captured these elements. We pilot tested these categories on seven tapes by separate independent observations by five members of our collaborating lab. We then discussed difficulties with the coding, clarified meanings, and created a codebook, describing our final set of 38 behaviors. Coders assessed the presence or absence of 38 behaviors, some of which are presented in Table 3 (e.g., parent telling the child they miss or love them, or expressing interest in the child's activities). Videos were no more than 15 minutes long. Coders received approximately two hours of training, and utilized a codebook throughout the coding process. For the variables being considered in the current study, interobserver agreement data for 10% of the videos yielded kappa coefficients for each of the 15 coded behaviors between .59 and .94.

Of the 186 parents who participated in this project, 172 videos were coded. Data from 10 videos were not included because the parent did not agree to have the message copied, two tapes was damaged and rendered uncodable, one parent sent the message to a

grandchild rather than their child, and one parent did not speak English in the message. Of the tapes coded, 170 parents (98.8%) told their children they loved them, 121 parents (65.1%) told their children they missed them, and 78 parents (45.3%) read books to their children. Gender differences in message content are shown in Table 2.

Composite variables were created to account for message positive interaction quality and parent's expression of negative affect. The composite variable for displays of positive interaction quality consisted of the following six codes: reassuring the child about their well-being, complimenting/praising/thanking the child, expressing appreciation/empathy towards the caregiver, discussing the child's interests/activities, telling the children they miss them, and telling the children they love them. Scores ranged from one to six (M = 3.46, SD = 1.24). The composite variable for displays of negative emotion included the following six codes: crying, telling the child they are sad or depressed, expressing anxiety about the taping, expressing negative emotion/attitude toward the child, expressing negative emotion/attitude toward the caregiver, and including inappropriate themes/content (e.g., reference to caregiver sexual relationships). Scores ranged from zero to five (M = .85, SD = .96). The composite coded variables assessing display of positive interaction quality and expression of negative emotion were significantly positively correlated, r (172) = .28, p = .00.

Caregiver Reports of Message Quality and Child Reaction to Message. Based on CP responses to the question, "In your own words, please describe the quality of the message" a trichotomous Caregiver Report of Message Quality variable was created (values = positive, mixed, negative). Most CP (n = 41, 73.2%) described the messages as positive. An example of responses coded as positive include: "I loved it, it really touched

the kids' hearts." Eleven caregivers (19.6%) described the message as being of mixed quality. An example of responses coded as mixed include: "Sad, but glad to see her." Four CP (7.1%) described the message quality as negative. An example of responses coded as negative include: "Mostly false statements."

Based on CP responses to the question "In your own words, please describe child's reaction to the message" a trichotomous Caregiver Report of Child Reaction to Message variable was created (values = positive, mixed, negative). Most (n = 33, 60.0%) CP described children's reactions after viewing their message as positive. Examples of responses that were coded as positive include: "She really enjoyed it." Thirteen CP (23.6%) described the children's reaction as mixed. Examples of responses that were coded as mixed include: "Surprised, happy, joyful, sad." Nine CP (16.4%) described the child's reaction to the message as negative. Examples of responses that were coded as negative include: "She was a little upset and began to cry."

All responses were initially coded by a graduate student research assistant. A second coder then coded 100% of the responses and had over 85% agreement. Discrepancies in coding were resolved through discussion and creation of an agreement code that was then used for analyses.

Results

Plan of Statistical Analyses

Prior to performing path analysis models that tested our primary hypotheses of interest, preliminary analyses were conducted to investigate factors that could potentially influence message content, as well as children's responses to their parent's message (i.e., child's mood, how frequently the child viewed his or her parent's message). First we

examined differences in IPP characteristics between IPP whose caregivers returned questionnaire packets and those who did not. Next we used independent samples t-tests to determine whether gender differences exist in parents' mood prior to filming their messages or in the content of parents' messages, particularly in regards to our codes of positive interaction qualities and expressions of negative affect. Independent samples t-tests were also conducted to determine if parent's prior history of co-residency with the child or incarceration history had an impact on the child's mood after viewing his or her message, or how frequently (s)he or watched the message. Lastly, we examined whether prior contact, taking a parenting class, parents' mood prior to filming their message, or parents' displays of negative emotions, had an impact on child outcomes. Guided by the outcomes of these preliminary analyses, covariates were added to the path analysis models, which tested the hypothesized relations between taking a parenting class, parents' displays of positive interaction qualities and expression of negative emotions, and children's mood after viewing their message.

Preliminary Analyses

Participants from Jail versus a Prison Facility. To ensure that there were no significant differences between the 36 IPP recruited from a jail and the 150 IPP recruited from a prison facility, a series of independent samples t-tests and chi-square tests were conducted. No differences emerged between these groups on parental mood, coded content of the video-taped messages, parent report of prior contact, caregiver participation, or participation in a parenting class. Only two significant differences emerged. Parents who were recruited from jail were more likely to have been previously incarcerated, $\chi^2 = 12.546$, $p = .000$. Parents recruited from jail also tended to have served

significantly more sentences, t (157) = -3.483, p = .001. Since there were no significant differences on any of the main study variables, IPP recruited from jail and from prison facilities are included together in the subsequent analyses.

Missing Caregiver Data. Further analyses were conducted to ensure that there were no significant differences between the 61 IPP whose children's caregivers participated and the 93 IPP whose children's caregivers did not participate. A series of independent samples t-tests and chi-square tests revealed no differences in prior incarceration history, parent report of prior contact, or in parenting class enrollment. In addition, the relationship of the children's caregiver to the parent was comparably distributed among both groups. Lastly, no differences emerged between these groups on any measure of parental mood or coded content of the video-taped messages. These results are available upon request. All IPP were included in the following preliminary analyses, but only the IPP whose children's caregivers participated were included in the subsequent path analyses.

Gender Differences. Independent samples t-tests revealed significant gender differences between mother and father IPP. Compared to male IPP, mothers reported higher mean level NA PANAS scores, t (170) = 3.32, p = .001, d = .52, and higher mean overall mood PANAS scores, t (169) = 2.24, p = .027, d = .35. Based on coding of the caregiver's report of message quality, women's messages were described as significantly less positive, t (53) = 2.71, p = .009, d = .66. In addition, codes of the videos revealed that mothers displayed significantly more negative emotion than men, t (170) = 2.57, p = .01, d = .40. There were no significant gender differences in our code of positive

interaction quality. Because of these gender differences, parent gender is entered as a covariate in the analyses that follow.

Factors Impacting Message Quality and Child Reactions to Taped Messages

Co-residence and Incarceration History. An independent samples t-test revealed that when parents reported living with their children prior to their incarceration, children tended to be in better moods after viewing their message, t (43) = 2.39, p = .021, d = .73. Co-residence did not significantly affect parent mood or emotional displays, or any other child outcome. Parents who reported a history of prior incarceration tended to have children who viewed their message significantly more frequently, t (44) = 2.126, p = .039, d = .31. The correlations between number previous incarcerations and child outcome variables were all non-significant.

Prior Contact. Correlations showed no relation between prior contact and any child outcome variables, based on the parent and caregiver aggregate reports of monthly and yearly contact (Table 4). One-way ANOVAs also showed no significant influence of prior contact on CP's description of the child's reaction or the message quality.

Parent Mood and Message Quality. A correlation matrix is presented in Table 4. In support of our hypotheses, parents who scored higher on the PANAS NA subscale displayed significantly more negative emotions in their video, r (160) = .209, p = .01. Parents who scored higher on the PANAS NA subscale tended to have caregivers who described their messages in negative ways, F (2, 51) = 6.220, p = .004, η^2 = .170. Using the trichotomous rating of caregiver report of message quality, we found that taped messages containing more negative emotions were rated as more negative by caregivers, F (2, 50) = 3.095, p = .05, η^2 = .144. However, parents' overall mood and PANAS PA

subscale score were not significantly correlated with their displays of negative emotion or our rating of positive interaction quality. As expected, correlational analyses revealed that parent and child mood were not directly related.

In support of our hypotheses we found that the coded quality of the video-taped messages was related to child outcomes. Children who watched videos rated high in negative emotional content were more likely to be rated by their caregivers as being in significantly more negative moods after viewing their message, r (54) = .324, p = .017. By contrast, parents who displayed more positive interaction qualities in their taped messages tended to have children who watched the message significantly more frequently, r (46) = .366, p = .012.

Taking a Parenting Class. Comparisons between IPP who had and had not taken a parenting class are shown in Table 5. None of our three hypotheses regarding the impact of parenting class were supported, that is parents who had taken a class did not produce higher quality tapes, nor did they report being in better moods before making the tape. However, an independent samples t-test revealed a direct relation between taking a parenting class and children's mood after viewing the tape, such that when parents had taken a parenting class, the caregivers of their children reported that the children were in significantly less negative moods after viewing their message, t (53) = 2.051, p = .046, d = .53. Chi-square tests revealed no significant influence of taking a parenting class on CP's description of the message quality or the CP's description of the child's reaction. Based on independent samples t-tests, taking a parenting class did not produce significant differences in the frequency at which the child viewed the tape (d = 0.09) or the child's overall PANAS score (d = 0.33).

Path Analyses

Based on the pattern of relations observed in the previous analyses, as well as our predictions regarding parent expression of positive interaction qualities and negative emotion, parenting class, parent mood, and child mood, the basic model presented in Figure 1 was tested. Path Analysis was conducted using IBM SPSS Amos 19 to test a model including both mother and father participants. Path Analysis was used because it can assess the effects of variables simultaneously. Parameter estimates were derived using full information maximum likelihood. Two models were tested. One model examined the impact of positive interaction qualities (as coded from IPP tapes) on children's mood and likelihood to view the tape (with parent mood, gender, parenting class and prior residency also included in the model); the second model examined the expression of negative emotion in taped messages in relation to children's negative mood following viewing the tape (with parent mood, parenting class, and parent gender also in the model). Only the model examining the expression of negative emotion showed significant relations and will be explored further (more information about the model with expression of positive interaction qualities is available upon request).

For the model examining the impact of the expression of negative emotions in IPP taped messages, we first tested the original model, as shown in Figure 1, χ^2 (2, N = 186) = 0.676, p = .676, followed by a model where non-significant paths were trimmed, χ^2 (4, N = 186) = 2.582, p = .630. Only two paths were trimmed in the second model, and model comparison showed that this did not significantly change the model fit. The first path removed was from parent PANAS NA to child PANAS NA. As expected, these two variables were not directly related, estimate = -.071, p = .513. The second path removed

was from parenting class to displays of negative emotion, this path was also not-significant, estimate = -.067, p = .644. Because removing these paths did not significantly impact the model fit, the model with the trimmed paths, shown in Figure 2, is reported.

The model presented in Figure 2 provided an excellent fit to the data. The chi-square was not statistically significant, χ^2 (4, N = 186) = 2.582, p = .63, suggesting no statistically significant discrepancies between the model and the data. The comparative fit index and the incremental fit index for the trimmed model were equal to 1.000 and 1.037 respectively, both of which indicate a good model fit. The root mean squared error of approximation of the residuals was .000 (95% confidence interval = .000 to .106), also indicating the model is a good fit to the data per degree of freedom. Standardized parameter estimates for the model appear in Figure 1.

The standardized estimate of the effect of parent's PANAS NA on expression of negative emotions in the taped messages was significant, estimate = .210, p = .028. Parent's expression of negative emotion in the message was a significant predictor of child's PANAS NA score, estimate = .288, p < .001. Although taking a parenting class did not directly impact parents' mood or expression of negative emotions in the message, there was a direct impact of taking a parenting class on child's PANAS Negative Mood score, estimate = -.298, p = .067, indicating that among parents who had taken a parenting class, their children were in less negative moods after viewing the taped message.

Discussion

The current study was the first to evaluate the content of a remote form of contact between incarcerated parents and their children, providing unique insight into why children may react to contact in certain ways. Though previous research has examined the impact of *quantity* of contact (e.g., Shlafer & Poehlmann, 2010), this is the first study to examine the impact of the *quality* of contact. Results support our hypothesis that that when parents expressed negative emotions in their video-taped messages, their children were in more negative moods after viewing the video. Although we expected that parents who had taken a parenting class would produce higher quality messages, characterized by more positive interaction qualities (e.g., expressions of love, appreciation) and fewer negative emotional displays, we did not find this to be the case. However, there was a direct link between taking a parenting class and children's negative mood suggesting that there may be a benefit to improving children's reaction to contact by taking a parenting class that was not captured in the current dataset. Also, as predicted, there was a direct link between parent's negative mood and their expression of negative emotions such that when parents were in a worse mood before filming their message they tended to show more negative emotions both in our coded responses and according to caregivers. The impact of parent negative mood on child negative mood was mediated by their expression of negative emotion in the taped message. Video taped messages characterized by more positive interaction qualities were more likely to be watched more frequently by children. Lastly, there were important gender differences as women were more likely to be in worse moods before filming, they were more likely to express negative emotions in their

messages and their children were more likely to be in more negative moods after viewing the message.

Displays of negative emotion included factors that could cause a child to become concerned about their parent's wellbeing as well as expressions of negative emotions or attitudes towards the child or caregiver. When a parent is incarcerated, children may have concerns about their parent's safety and wellbeing (Philbrick, 2002). As a result, when parents did things like cry, tell the child they were sad or depressed, or express a negative emotion/attitude toward the child or caregiver, they may have inadvertently elicited some of these negative emotions in their children. Parents were more likely to do these things if they self-reported being in negative moods prior to filming their messages. If children perceive their parent to be dysphoric, it could increase concerns for their parent's wellbeing, or elicit similar feelings in themselves. This could lead to more negative feelings about contact with the incarcerated parent and a desire to avoid future contact.

In regards to expressions of positive interaction qualities, parents who did things like tell the child that they loved them, express appreciation and concern for the child had children who watched the message more frequently, but it did not seem to affect the child's mood. There was a significant correlation between displays of positive interaction qualities and expression of negative emotions, so it is possible that displaying negative emotions outweighed any positivity the parents expressed in regards to children's mood.

The hypothesis that parent and child mood would not be directly correlated was supported. It appears that parental displays of negative emotion, which are influenced by the parent's mood, are the mediating factor in predicting children's negative mood after

viewing the message. The results of the current study suggest that if parents' moods can be improved prior to filming their message, they may send videos with fewer negative emotions and children may respond more positively to this form of contact. It is important to note that there was not a significant relationship between parent's overall mood or positive mood and children's mood after viewing the message. As a result, it may be more important to decrease the negative feelings parents are experiencing, rather than simply increasing their positive emotions. .

Parents who participated in parenting programs tended to have children who were in less negative moods after viewing their messages. However, taking a parenting class was not directly linked to displaying more positive interaction qualities or less negative emotions in the taped messages. This suggests that there are other factors about parenting classes to consider, factors not accounted for in the current study that may account for this result. We hypothesized that parents who took a parenting class would produce higher quality videos or report being in more positive, less negative moods prior to taping their message; these hypotheses were not supported by the results of this study. This may be partially due to the variability in our sample in terms of the structure, curriculum, duration of the parenting classes our participants reported taking, and whether or not contact was a part of the parenting program. Of the participants in this sample, some had completed parenting classes in the past, possibly during previous incarcerations, whereas others had recently finished or just begun their class. Some of the participants completed a program that involved an enhanced parent-child visitation component. It is also possible that the timeline of their participation relative to the filming of their message affected how able they were to regulate displays of negative

emotion in particular. Due to the variability in programming, we were unable to assess the degree to which the varied parenting programs focused on teaching skills in regulating their emotions during parent-child contact. However, the present results are consistent with a model for parenting training in prison that includes such attention to the parents' own emotional distress (Loper & Tuerk, 2011). Future research should examine this issue more in depth, as emotional displays during contact seem to be a strong predictor of children's reactions.

Future research should also further consider parental gender differences. Our results suggest that mothers are at particular risk of expressing negative emotions to their children during their contact with them. Females in particular may benefit from emotional management training as part of a parent-education program. Although males and females were equally represented in the current study, previous research has shown that fathers are less likely to participate in parenting classes than mothers (11% vs. 27%). However, overall more fathers take part in classes than mothers because the vast majority of incarcerated individuals are male (Glaze & Maruschak, 2008). Specifically, using Bureau of Justice Statistics estimates of the 744,200 incarcerated fathers and 65,600 incarcerated mothers, 81,862 fathers took a parenting class in 2007, compared to 14,432 mothers. While it is important to recognize that incarcerated mothers and fathers may face different parenting challenges, and their separation may have different impacts on their children, it is equally important to ensure that the large numbers of incarcerated fathers are not overlooked when providing child-related services and research (Phillips, 2010).

The current study examined one specific form of contact, but the finding that displays of negative emotions directly influenced children's reactions to the contact may be generalized to other forms of contact. Future research is needed to determine whether similar processes are occurring in other forms contact as well. Previous research has demonstrated the benefits of having contact, but no study has looked at the quality or content of the contact. One reason quality of contact has not been examined in prior research with incarcerated populations is that researchers may infringe on the privacy and intimacy if they observed or recorded most tradition forms of live contact (e.g., phone calls and visits). With proper permission, the quality and content of letters could be examined unobtrusively in future research.

One limitation of this study is the relatively small number of caregiver participants. Caregiver reports were used as to assess children's reactions to the messages, so a more limited number of responses resulted in a loss of power. However, we hasten to note that with 61 caregiver participants our sample size was adequate to detect large effects and is comparable or slightly larger than the majority of studies examining the impact of incarcerated parent-child contact (see Poehlmann et al., 2010). Nonetheless, it was extremely challenging to get responses from caregivers, even when an incentive was provided and follow up phone calls and mailings were made. However, having a larger response rate could have produced more variability and allowed for the detection of smaller effects.

Perhaps the most important realization of the current study is how parental displays of negative emotions can affect children's responses to contact with their incarcerated parent. This finding supports the claim that the quality of contact does

matter, not simply the quantity; it cannot be assumed that more contact will predict better outcomes for children, especially if there is substantial negativity being displayed by the parent. It could be advantageous for parenting programs both with and without child involvement to include contact components such as video messages or video conferencing, especially when the curriculum focuses on teaching parents how to regulate their negative emotions. If parents and children engage in more regular contact throughout parenting program participation, there will be more opportunities for parents to practice parenting skills and display more positive interaction skills and fewer negative emotions. Hopefully, more consistent and more positive contact would lead to better outcomes for children during the difficult time of separation from parents during their incarceration.

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Table 1. *Inmate Parents Descriptive Data*

	Incarcerated Mothers (n = 105) M (SD)	Incarcerated Fathers (n = 81) M (SD)
Characteristic		
Age	32.4 (6.53)	31.8 (7.7)
Ethnicity		
Caucasian (%)	48.6% (n = 51)	24.7% (n = 20)
African American (%)	41.9% (n = 44)	60.5% (n = 49)
Hispanic (%)	1.9% (n = 2)	8.6% (n = 7)
Other (%)	3.8% (n = 4)	3.7% (n = 3)
Educational Attainment		
Some High School (%)	24.8% (n = 26)	14.8 (n = 12)
Technical or Trade School(%)	1.9% (n = 2)	4.9% (n = 4)
High School Diploma or GED (%)	37.1% (n = 39)	53.1% (n = 43)
Some College (%)	22.9% (n = 24)	19.8% (n = 16)
College Degree (%)	3.8% (n = 4)	4.9% (n = 4)
Graduate Degree (%)	2.9% (n = 3)	-
Marital Status		
Single (%)	50.5% (n = 53)	64.2% (n = 52)
Married (%)	23.8% (n = 25)	24.7% (n = 20)
Divorced (%)	17.1% (n = 18)	7.4% (n = 6)
Widow (%)	2.9% (n = 3)	-
Number of Children	2.3 (1.3)	2.7 (1.5)
First Time Incarcerated		
Yes (%)	42.9% (n = 45)	29.6% (n = 24)
No (%)	51.4% (n = 54)	67.9% (n = 55)
Parenting Class (Yes)	41.9% (n = 44)	46.9% (n = 43)

Table 2. *Caregiver Descriptive Data*

	Caregivers for Children of Inmate Mothers(n = 37) *M* (*SD*)	Caregivers for Children of Inmate Fathers(n = 24) *M* (*SD*)
Characteristic		
Sex (Female)	80.0% (n = 28)	100.0% (n = 24)
Age	47.4 (13.6)	33.4 (9.6)
Ethnicity		
Caucasian (%)	51.4% (n = 18)	21.7% (n = 5)
African American (%)	48.6% (n = 17)	43.5% (n = 10)
Hispanic (%)	-	21.7% (n = 5)
Other (%)	-	13.0% (n = 3)
Educational Attainment		
Some High School (%)	8.9% (n = 3)	22.7% (n = 5)
High School Diploma or GED (%)	29.4% (n = 10)	36.4% (n = 8)
Some College (%)	41.2% (n = 14)	18.2% (n = 4)
College Degree (%)	20.6% (n = 7)	18.2% (n = 4)
Other (%)	-	4.5% (n = 1)
Marital Status		
Single (%)	32.4% (n = 12)	39.1% (n = 9)
Married (%)	40.5% (n = 15)	43.5% (n = 10)
Divorced (%)	8.1% (n = 3)	8.7% (n = 2)
Separated (%)	5.4% (n = 2)	-
Widow (%)	13.5% (n = 5)	4.3% (n = 1)
Relationship to Inmate		
Wife (%)	-	25.0% (n = 6)
Husband (%)	2.7% (n = 1)	-
Mother of Child	-	29.2% (n =7)
Mother (%)	37.8% (n = 14)	16.7% (n =4)
Father (%)	2.7% (n = 1)	-
Grandmother (%)	5.4% (n = 2)	-
Grandfather (%)	2.7% (n = 1)	-
Sister (%)	5.4% (n = 2)	4.2% (n = 1)
Aunt (%)	5.4% (n = 2)	-
Cousin (%)	2.7% (n = 1)	-
Friend (%)	13.5% (n = 5)	4.2% (n = 1)
Other (%)	21.6% (n = 8)	20.8% (n = 5)

Table 3 *Gender Differences in Message Content*

Variable	Inmate Mothers (*n* = 98)	Inmate Fathers (*n* = 74)	χ^2	*p-value*
Qualities of Positive Interaction:				
Reassure About Well-Being	23.5% (*n* = 23)	24.3% (*n* = 18)	0.017	.896
Compliment/Praise/ Thank Child	61.2% (*n* = 60)	56.8% (*n* = 42)	0.349	.555
Express Appreciation/ Empathy Toward Caregiver	58.2% (*n* = 57)	51.4% (*n* = 38)	0.791	.374
Discuss Child's Interests/Activities	34.7% (*n* = 34)	43.2% (*n* = 32)	1.303	.254
Tell Child They Miss Them	73.5% (*n* = 72)	66.2% (*n* = 49)	1.063	.302
Express Love For Child	98.0% (*n* = 96)	100.0% (*n* = 74)	1.528	.216
Negative Expression of Emotions:				
Cry	32.7% (*n* = 32)	12.2% (*n* = 9)	9.751	.002
Tell the Child they are Sad/Depressed	10.2% (*n* = 10)	4.1% (*n* = 3)	2.282	.131
Express Anxiety About Taping	30.6% (*n* = 30)	10.8% (*n* = 8)	9.605	.002
Express Negative Attitude Toward Child	12.2% (*n* = 12)	17.6% (*n* = 13)	0.962	.327
Express Negative Attitude Toward Caregiver	2.0% (*n* = 2)	8.1% (*n* = 6)	3.500	.061
Inappropriate Themes/Content	13.3% (*n* = 13)	10.8% (*n* = 8)	0.237	.626
Other Behaviors Parents Did in the Taped Messages:				
Read Book	36.7% (*n* = 36)	56.8% (*n* = 42)	2.649	.009
Include Drawings/ Pictures	6.1% (*n* = 6)	18.9% (*n* = 14)	6.719	.010
Include Singing	11.2% (*n* = 6)	6.8% (*n* = 14)	2.465	.015

Table 4

Summary of Correlations, Means, and Standard Deviations for All Participants

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	M	SD
Parent Report of Involvement:																	
1. Prior Involvement	-	.285	.422**	.204*	-.162*	.168*	.541**	.223	.372**	.192	.079	.291*	.032	.029	-.063	3.29	0.99
2. Level of Monthly Contact		-	.709**	.131	-.108	.089	.357	.647*	.444	-.151	.217	-.092	.147	-.210	.026	5.85	3.64
3. Level of Yearly Contact			-	.403**	-.377**	.273*	.577**	.497	.775**	-.120	.408	.175	.163	-.207	-.206	18.10	6.26
Parent Report of Mood																	
4. PANAS Overall Mood				-	-.814**	.752**	.121	-.334*	.117	.046	.037	.092	-.148	.002	-.150	1.87	1.17
5. PANAS Negative Mood					-	-.229**	-.121	.319*	-.174	.005	-.043	-.028	.133	.016	.208**	1.20	0.79
6. PANAS Positive Mood						-	.090	-.210	.025	.087	.014	.127	-.085	.019	-.019	3.07	0.70
Caregiver Report of Involvement:																	
7. Parent's Prior Involvement							-	.289	.439**	.346*	.084	.447**	.215	-.033	-.031	3.05	1.16
8. Level of Monthly Contact								-	.576**	.031	-.027	.028	.040	.230	-.013	8.51	9.37
9. Level of Yearly Contact									-	.023	.211	.174	.049	.121	.112	18.83	6.89
Caregiver Report of Child Mood/Outcomes																	
10. PANAS Overall Mood										-	-.482**	.822**	.296*	.039	-.171	1.90	1.19
11. PANAS Negative Mood											-	.103	.057	.124	.324*	0.43	0.68
12. PANAS Positive Mood												-	.322*	.100	.016	2.31	1.04
13. Frequency of Views													-	.366*	.144	4.13	3.46
Observer Rating of Video Codes:																	
14. Positive Interaction Qualities															-	.283**	3.46 1.24
15. Displays of Negative Emotion															-	0.49	0.96

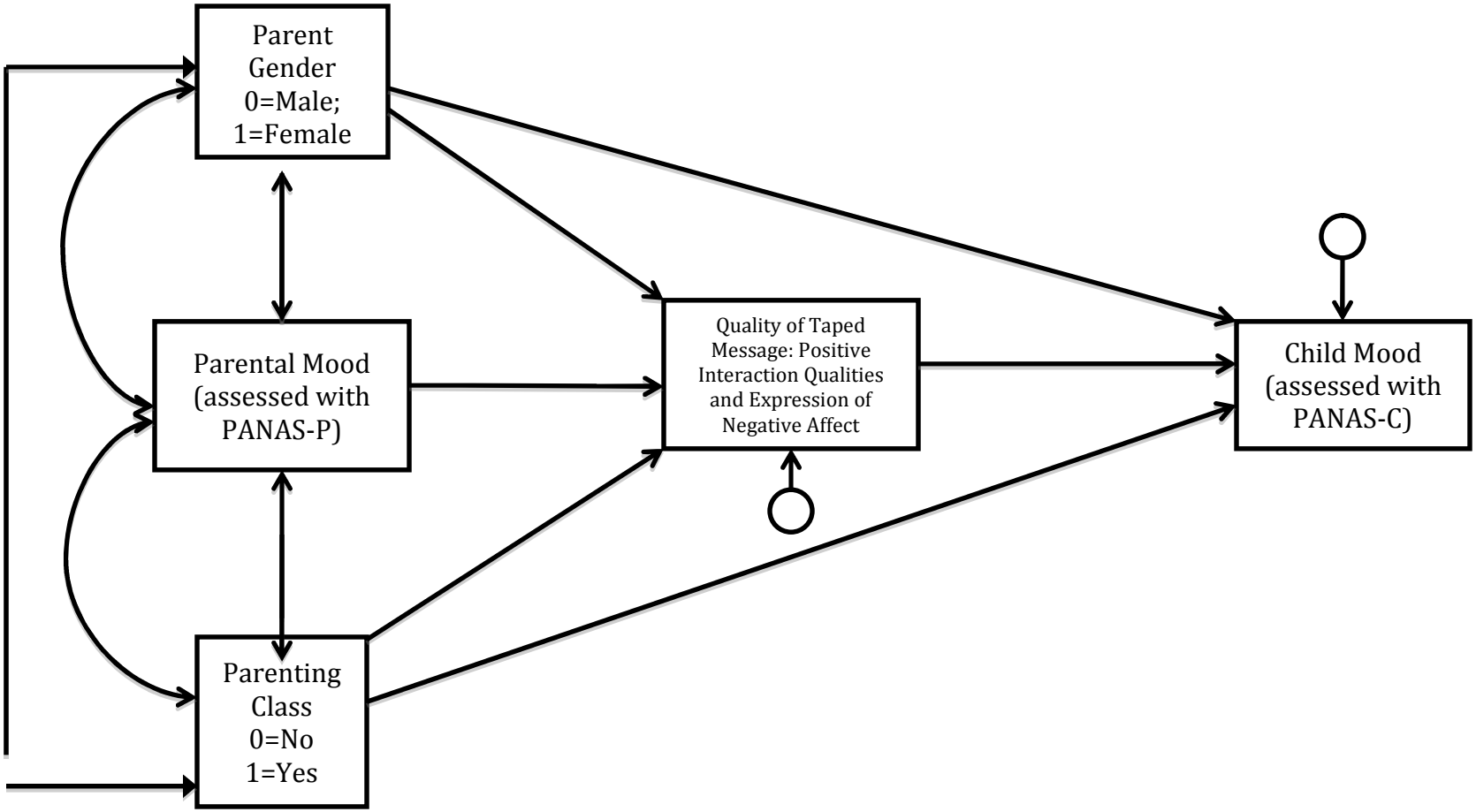
Note: Prior Involvement= Parent's report of how involved they were with the child prior to their incarceration; PANAS=Positive and Negative Affect Scale; Parent's Prior Involvement= Caregiver's report of how involved the parent was prior to their incarceration; Frequency of Views = Caregiver's report of how frequently child views the message. ** $p < .01$, * $p < .05$

Table 5
Differences Based on Taking a Parenting Class

Variable	Parenting Class 47.8% (*n* = 87)	No Parenting Class 52.2% (*n* = 95)	χ^2	*p-value*
Parent Report				
Parent Gender (% Male)	49.4% (*n* = 43)	40.0% (*n* = 38)	1.633	.201
First Time in Jail	37.9% (*n* = 33)	36.8% (*n* = 35)	0.012	.911
Live with Child Prior to Incarceration	59.8% (*n* = 52)	61.1% (*n* = 58)	1.577	.209
Caregiver Report				
Description of Message Quality				
Positive	77.3% (*n* = 17)	72.7% (*n* = 24)	3.120	.210
Mixed	22.7% (*n* = 5)	15.2% (*n* = 5)		
Negative	-	12.1% (*n* = 4)		
Description of Child Reaction				
Positive	54.5% (*n* = 12)	66.7% (*n* = 22)	0.888	.642
Mixed	27.3% (*n* = 6)	18.2% (*n* = 6)		
Negative	18.2% (*n* = 4)	15.2% (*n* = 5)		
	M (*SD*)	*M* (*SD*)	*t*	*p-value*
Parent Report				
PANAS-P	1.97 (1.20)	1.78 (1.15)	1.079	.282
Negative Mood-P	1.13 (0.80)	1.24 (0.74)	0.859	.391
Positive Mood-P	3.11 (0.69)	3.03 (0.72)	0.802	.423
Video Codes				
Positive Interaction Qualities	3.51 (1.23)	3.43 (1.28)	0.414	.678
Expression of Negative Emotion	0.78 (0.78)	0.90 (1.09)	0.849	.397
Caregiver Report				
PANAS-Ch	2.15 (1.38)	1.74 (1.04)	1.249	.217
Negative Mood-Ch	0.24 (0.40)	0.58 (0.81)	2.051	.046
Positive Mood-Ch	2.39 (1.15)	2.29 (0.98)	0.324	.747
Frequency of Views	4.41 (3.26)	4.07 (3.62)	0.325	.747

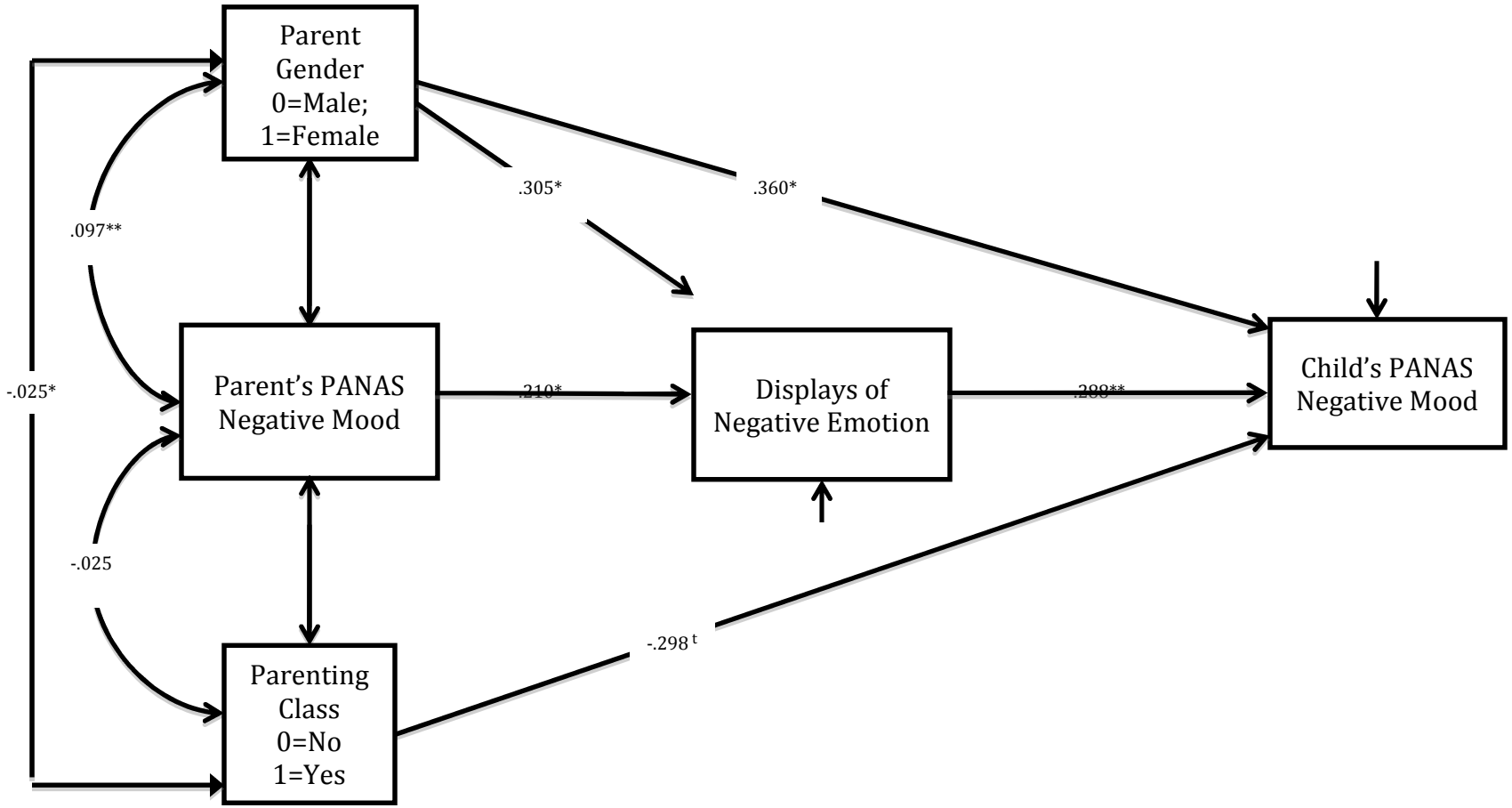
Note: Description of Message Quality = Caregiver's description of the message; Description of Child Reaction = Caregiver's report of how the child reacted; PANAS-P = Parent's Mean Overall Mood Based on the Positive and Negative Affect Scale; Negative Mood-P = Parent's Mean Negative Mood Based on the Positive and Negative Affect Scale; Positive Mood-P = Parent's Mean Positive Mood Based on the Positive and Negative Affect Scale; PANAS-Ch = Child's Mean Overall Mood Based on the Positive and Negative Affect Scale; Negative Mood-Ch = Child's Mean Negative Mood Based on the Positive and Negative Affect Scale; Positive Mood-Ch = Child's Mean Positive Mood Based on the Positive and Negative Affect Scale; Frequency of Views = Caregiver's report of how frequently child views the message

Figure 1. Basic Path Model



Note. PANAS-P=Positive and Negative Affect Scale-Parent Report, PANAS-C=Positive and Negative Affect Scale-Caregiver Report of Child Emotion

Figure 2. Path Analysis Model for Negative Emotions with Unstandardized Regression Weights



Note. $^{**}p \leq .01$, $^{*}p \leq .05$, t = $p < .10$; χ^2 (2, N = 186) = 0.676, p = .713; CFI = 1.000; IFI = 1.037; RMSEA = .000

Academic Risk and Resiliency of Youth with Incarcerated Parents[1]

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Abstract

This study examined the impact of parental incarceration on truancy, cumulative GPA, and highest level of education obtained using data from the National Longitudinal Survey of Adolescent Health (*n* = 15, 000; 48.3% female). We also examined potential protective individual and school characteristics to determine whether they significantly reduced the risk associated with parental incarceration. Weighted multilevel modeling results revealed significant risks associated with parental incarceration for all three outcomes, even while controlling for individual covariates, parent- family connectedness, school connectedness, counseling, and school level characteristics. When examining truancy and GPA, family and school connectedness were identified as potentially protective factors for those with and without a history of parental incarceration. School connectedness did not increase highest level of education for those with a history of parental incarceration. Our study supports the pervasive academic risk associated with parental incarceration, while revealing potential areas for prevention and intervention in the schools.

Introduction

The United States has the highest incarceration rate in the world. As a result, about 1 in 43 children in the United States have a parent in prison every year, nearly half of who are between 11 and 18 years old (Maruschak, Glaze, & Mumola, 2011). Although considerable research has examined risk factors and associated outcomes within this population, there is little research to date on the protective factors that promote healthy adjustment for youth who face parental incarceration. In order to offer service providers with guidance on informed interventions for this population, we must first identify individual, family, and school characteristics that promote resiliency and healthy adaptation within the context of risk (Masten et al., 1999). Our study uses the National Longitudinal Study of Adolescent Health (Add Health) dataset to (1) confirm the academic risk associated with parental incarceration; and to (2) further investigate potential protective factors on both individual and school levels.

Risks of Parental Incarceration

The ripple effects that incarceration has on families are well documented. Incarceration of parents leads to structural changes within the household, loss of financial support, and increased strain on family relationships (Travis & Waul, 2003). About half of the parents who are incarcerated in state or federal prisons report living with at least one of their children prior to arrest (Glaze & Marushak, 2008). As a result of incarceration, these adolescents are separated from their parents, switch caregivers, neighborhoods, schools, and may be separated from their siblings (Travis & Waul, 2003). In addition to the economic strain placed on families as they lose a potential income and/or gain additional expenses, adolescents also experience emotional and relational

strain as they struggle with the grief, guilt, and stigma associated with the loss of the parent (Hairston, 2003). The overwhelming numbers of stressors that result from incarceration likely impact the course of development during a tumultuous and high-risk stage of life. Adolescents may be uniquely impacted by the incarceration of parents, as throughout this developmental period they are experiencing significant changes in cognitive, social, and emotional abilities while having frequent opportunities for engaging in risky behaviors (Shlafer & Poehlmann, 2011). Previous studies suggest that children with incarcerated parents are at higher risk for externalizing behaviors, delinquency, and incarceration themselves (Murray & Farrington, 2008; Murray, Farrington, & Sekol, 2012). They also have lower rates of positive life outcomes, such as high school graduation, healthy emotional adjustment, and employment (Murray & Farrington, 2008).

Schools can be a place where some adolescents with incarcerated parents experience stigma, academic failure, and where they demonstrate risky, maladaptive behaviors (Murray & Farrington, 2008). This poses a unique challenge to educators and administrators, as this high-risk but often invisible population passes through their schools. It may be especially crucial for schools to play a role in intervention for these adolescents. The failure to graduate high school has been observed at higher rates in children with incarcerated parents (Murray & Farrington, 2008; Trice & Brewster, 2004) as well as within youth with any incarcerated household member (Nichols & Loper, 2012). High school drop out, in turn, is related to lower lifetime income and increased chances of being unemployed, welfare-dependent, and incarcerated (NCES, 2010). Incarceration in the family may affect adolescents' relationships with their peers and

teachers, as well as influence academic motivation, achievement, and behaviors that further influence school completion (Shlafer & Poehlmann, 2011).

Academic outcomes of adolescents with incarcerated parents. A recent meta-analysis by Murray, Farrington and Sekol (2012) found that studies of parental incarceration and academic outcomes had varied results, highly dependent upon studies' covariates (e.g., socioeconomic status), and show an association but no clear casual patterns between parental incarceration and academic failure. While studies had found that parent incarceration increased the odds of poor school performance by 1.5, this association decreased to 1.1 when looking only at studies that controlled for potential covariates (e.g., IQ, socioeconomic status, etc.). A review of the most recent studies will provide a fuller understanding of the relation between parental imprisonment and school outcomes.

Studies that compared small, localized samples to control groups found a higher rate of poor academic achievement, school dropout, and negative school behaviors (Trice & Brewster, 2004; Murray & Farrington, 2008). Trice & Brewster (2004) found a higher rate of school drop out when comparing adolescents with incarcerated mothers with their best friends (36% vs. 7%). Murray & Farrington (2008) followed a group of boys in an industrial British city from 1953 to 2008, and found that boys who experienced parental incarceration had significantly poorer education outcomes at age 14 and at age 18 when compared to boys whose parents were incarcerated before birth, separated from parents due to hospitalization or death, and never separated from their parents (Murray & Farrington, 2008).

Recently a series of studies have used large, longitudinal datasets to further

explore the academic outcomes of these potentially at-risk adolescents. Cho (2009a, 2009b, 2010) used a sample of over 4,000 youth whose mothers were incarcerated for one month or more in Cook County prison in Chicago, Illinois. When compared to peers whose mothers were in jail for a week or less, children with incarcerated mothers had significantly lower rates of grade retention, and maternal incarceration had minimal impact on their academic achievement (Cho, 2009a; Cho, 2009b). She also found that maternal incarceration during middle childhood or early adolescence placed youth at the greatest risk to drop out of school (Cho, 2010) and that youth are at the highest risk for dropping out during the years of incarceration (Cho, 2011). Despite previous suggestions that children are actually protected from stigma in schools where incarceration is more common, there were no differences between adolescents' rate of school drop out based on school concentration of maternal incarceration, after controlling for average standardized test scores (Cho, 2011). Hagan and Foster (2012) found that paternal incarceration was also significantly associated with the youth's GPA and college attainment, even after controlling for a wide range of individual and school variables using the National Longitudinal Survey of Adolescent Health.

While the general findings of these studies support the importance of developing interventions and policies to change the educational trajectory of these at risk youth, relatively little is understood about factors that mediate the relationship between a history of parental incarceration and educational attainment. Understanding such factors, particularly those that serve to lessen the impact of parental incarceration on affected children, would provide important guidance for developing best practices for these youth (Murray & Farrington, 2006). An examination of existing theoretical notions regarding

the specific risk and protective mechanisms that may affect children of incarcerated parents affords the basis for hypothesizing the particular mediating factors that merit empirical scrutiny.

Theoretical Models for Risk and Protective Mechanisms

The risks and protective factors associated with parental incarceration can be broadly understood from a developmental ecological model (Bronfenbrenner & Ceci, 1994, Dallaire, Cocchini, & Wilson, 2010; Poehlmann, Dallaire, Loper & Shear, 2010). This theory stresses that development is influenced by proximal interactions within immediate social contexts, such as the home and school (Bronfenbrenner & Ceci, 1994). Essentially, development is influenced by any ongoing social relationships within the youth's immediate context. Additionally, incarceration can influence the child's exosystem, which includes the larger social context such as the family's poverty level, social stress, and their experience of the school environment. Accordingly, to truly understand the development of children with incarcerated parents, this theory stresses the examination of the relationships and the social environments that define the experience.

Although an ecological model provides an overarching structure for understanding the importance of household members in a youth's development, there are multiple theories that more precisely explain how incarceration may directly impact both the microsystem and the exosystem within the child's environment. Mechanisms that can link incarceration and lifetime maladjustment include attachment/social bonding (Poehlmann, 2010; Murray & Murray, 2010), social and economic strain (Hagan & Dinovitzer, 1999; Nichols & Loper, 2012; Sirin, 2005), stigma (Murray, 2007), and social learning (Hagan & Dinovitzer, 1999; Murray & Farrington, 2008). It is likely that these

mechanisms are not exclusive, and that different mechanisms hold true for different children and situations (Murray, Farrington & Sekol, 2012). Although these separate theories describe differing pathways of risk, they all result in the possibility of the adolescent's disconnection from the influential positive support systems within the family and school.

All four of these theories suggest that maladjustment results from a disconnection from sources of positive social support, whether it is due to the removal of attachment figure (attachment/ social bonding), decreased resources and availability (strain), increased sense of isolation (stigma), or a general disconnection from pro-social contexts (social control). Feeling connected to multiple social contexts, such as the home and school, is an important aspect of positive youth development (Witherspoon, Schotland, Way & Hughes, 2010), and is associated with higher academic achievement. Additionally, in the absence of one source of connection, the connection to other contexts can promote resiliency (Witherspoon, Schotland, Way & Hughes, 2010). As mentioned previously, the incarceration of a parent may lead to an adolescent feeling disconnected from their family, and result in them being relocated away from their neighborhood, peers, or school. Therefore, it is plausible that fostering connection to school, or other parent/ family members, could protect against academic decline.

Promoting Resiliency in Youth with Incarcerated Parents

Resilience is classified by healthy development in the presence of a significant threat to an individual's development - either by being of high-risk status (e.g. poverty status in a single parent household in a high crime neighborhood) or by exposure to a severe trauma or adversity (Masten & Coatsworth, 1998). Many adolescents with

incarcerated parents are exposed to both of these threats as they have a greater likelihood of living in an environment of accumulated risk factors (Dallaire, 2007) prior to the adversity of having a parent arrested. Regardless of whether they witness the arrest or sentencing, the abrupt and confusing removal of a parent is an emotionally distressing event that results in ongoing adversity (Murray & Farrington, 2008). Despite the various findings that suggest many children with incarcerated parents have poor outcomes, many youth appear to be resilient to associated adversities and go on to succeed in their academics, social lives, and professions. For the present study, we focus on psychosocial resources that can be manipulated through prevention and intervention efforts at home and in the school to provide the most useful suggestions for clinicians and school staff.

Individual Protective Factors for Academic Competency

Parent-family connection. Parent-family connection. Several studies attest to the value of healthy connection, as measured by self report or frequency of contact, between children of incarcerated parents and their imprisoned parents, specifically in regards of academic success (Dallaire, Ciccone, & Wilson, 2010, Hagan & Foster, 2012, Trice & Brewster, 2004). Trice and Brewster (2004) found that adolescents who had weekly contact with their mother were four times less likely to drop out or be suspended form school. Dallaire, Ciccone, & Wilson (2010), interviewed local elementary school teachers about students' school behaviors, and found that students overall behavior would generally improve after receiving a letter from their imprisoned parent. Additionally, Hagan & Foster (2012) found that the youth's perception of being close to their incarcerated father was associated with increases in their overall grade point averages. Contact with the imprisoned parent allows the adolescent to remain connected with their

parent, during a time where parent attachment and involvement has a significant impact on school achievement (Jeynes, 2005; Witherspoon, Schotland, Way & Hughes, 2009).

Caregivers are considered the "gateway" to the adolescent's relationship to the incarcerated parents, as they determine when and how communication occurs (Poehlmann, Dallaire, Loper & Shear, 2010). Equally important to the prisoner-child relationship is the relationship between adolescents and their remaining caregivers. After incarceration, the caregiver often experiences a considerable increase in responsibility and strain, while continuing to be the primary caretaker, responsible for the adolescent's healthy academic, emotional and social development, which may interfere with the healthy adolescent-caregiver relationship. Feeling close and attached to one's family and residential parents is protective against a host of risk taking behaviors (Resnick et al., 2003, Resnick, 2000). Additionally, family connection of any kind has been found to promote academic performance (Witherspoon, Schotland, Way, & Hughes, 2009). Kierkus and Baer (2002) found that sense of connection to one's family was an important protective factor for teenagers living with single parents or without natural parents, in that it reduced the probability of engaging in delinquent behaviors, which suggests it may also be protective for adolescents with incarcerated parents, as they have similar family structures.

School connection. Qualitative and experimental studies have found that some children with incarcerated parents feel that teachers and students view and treat them differently (Nesmith & Ruhland, 2008), and that teachers actually perceive students with an incarcerated parents as less behaviorally, socially, and academically competent than their peers (Dallaire, Ciccone, & Wilson, 2010). This stigma can result in the children

disengaging from the school environment and associated positive social and academic benefits. In general, school connectedness is defined as an attachment and commitment to the school and the teachers (Maddox & Prinz, 2003). Lack of school bonding has been linked to multiple negative life outcomes: substance use, delinquent behavior, academic outcomes, low self-esteem and risky sexual behaviors (Maddox & Prinz, 2003; Catalano et al., 2004; Hawkins et al. 2005). School bonding has also been found to predict student's positive school adjustment, achievement, and overall positive psychosocial outcomes (Libbey, 2004; Osterman, 2000). School connection can be especially important as a protective factor for when students feel disconnected from their parents or family (Witherspoon, Schotland, Way, & Hughes, 2009).

School Protective Factors for Academic Competency

School size. A review of the school size literature by Leithwood and Jantzi (2009) found that small school settings improved school engagement and achievement, particularly with disadvantaged and low SES students. Additionally, school size was one of the few school characteristics significantly associated with a student's report of school connection, when studying a large representative sample from the National Longitudinal Survey of Adolescent Health (McNeely, Nonemaker and Blum, 2002). Children with incarcerated parents often have high rates of poverty and accumulated adversities, which suggests that they too would benefit from attending smaller schools.

Mental health services. School based mental health services, such as counseling services, provide greater access for distressed students to receive support and opportunities to promote a sense of school connection. School based services increase the availability of assistance to high risk populations, reduce stigma for receiving mental

health services, and increase opportunities for mental health promotion and prevention. Murray & Farrington (2006) recommend school counselors specifically for children with incarcerated parents as they believe school counseling would be helpful to youth experiencing distress due to the separation or stigma caused by the parental imprisonment. Currently there is limited information on the influence of school based mental health services on promoting academic achievement and preventing problem school behaviors (Rones & Hoagwood, 2000), although what research does exist, suggests that school-based mental health services may be more beneficial than community services (Weiss, Catron, Harris & Phung, 1999). In the present study, we examine the potentially protective value of student report of receiving any form of counseling (in school or in community) on an individual level, as well as accessibility to mental health services on a school level.

Opportunities for parent involvement. Schools that have the greatest "holding power" have opportunities for meaningful involvement for both students and their parents (Christenson & Thurlow, 2004). Parent involvement in the schools is significantly associated with a student's academic achievement, regardless of their gender or ethnicity (Jeynes, 2005). Multiple meta-analyses have confirmed this relation in general and high-risk student populations (Fan & Chen, 2001; Jeynes, 2005). Caregivers of adolescents with incarcerated parents are likely already under significant strain, suspicious of public institutions, or had negative school experiences during their education. All of these barriers make it essential that schools have an environment that promotes parent involvement and values the home-school connection. Without this culture, it is unlikely

that the caregivers will get the support they need from school staff to get involved in their adolescent's education.

The Current Study

Our study had two primary objectives. The first was to examine the risk of parental incarceration on adolescent's problem school behavior (Truancy), academic achievement (GPA), and educational attainment (Education Level) in a large nationally representative dataset (Add Health). We predicted that a history of parental incarceration would be positively associated with truancy, and negatively associated with academic achievement and educational attainment, even when controlling for individual and school level factors. The second objective was to determine whether individual and school level factors could mediate the relationship between a history of parental incarceration and the three school outcomes, and to determine if these characteristics had different influences on youth with incarcerated parents than those without incarcerated parents. We hypothesized that family connectedness, school connectedness, and counseling would be significant predictors of truancy, cumulative GPA and educational attainment. We also hypothesized that the association between a history of parental incarceration and school outcomes would vary between schools, and this variance would be partially explained by school size, onsite mental health services, and parent involvement. Finally, we hypothesized that observed protective factors would have a greater impact within the parental incarceration sample in that they would reduce the magnitude of the relationship between parental incarceration and the outcomes (Truancy, GPA, HLE).

METHOD

Participants

Participants were drawn from the In Home Survey of the Add Health dataset, a nationally representative study of 7th to 12th grade students in the United States between 1994 and 1995 (Harris et al., 2009). Subjects were recruited from 80 high schools and 52 middle schools, considered to be representative of schools in the United States with respect to region, urbanicity, size, type (public/private) and ethnic diversity. Administrators from the participating schools completed questionnaires covering school policies and characteristics during the first wave of data collection. Given the clustered nature of the sample and the overrepresentation of specific populations, weights were provided for use in analysis. The current study uses data from the school administrators survey (1994-1995); In-home interviews at Wave I (ages 12-18) and Wave IV (January 2008-February 2004; ages 24-32), and the Adolescent Health and Academic Achievement dataset (AHAA), a collection of supplementary school transcript data (Muller et al., 2007). The AHAA data was collected from 91% of Wave III participants who consented to release their school transcript data (Muller et al., 2007). Questions related to parental incarceration were only asked at Wave IV; therefore the sample was limited to participants from the most recent wave of interviews. Control and protective variables were taken from Wave I In Home and School Administrator data. We selected outcome variables from Wave I (Truancy), Wave IV(Highest Level of Education), and the AHAA data (Cumulative GPA).

As data regarding individual and school protective factors were obtained from Wave I, only individuals who reported having a parent (biological or residential mother

or father) incarcerated after birth and before or at Wave I data collection were part of the parental incarceration group. Those who had a parent incarcerated before birth, after Wave 1, or did not report their age at incarceration, were excluded from analyses. About 12% of the weighted sample reported having a mother or father incarcerated after their birth and prior to or during Wave 1 data collection. Almost half (48.3%) of the full sample was female, with a mean age of 15.9 year old at Wave 1. See Table 1 for a description of the sample.

Measures

School Level Characteristics. *Control variables.* School level variables of urbanicity (urban, suburban, rural), school sector (public vs. private), diversity of school teachers (% white) , and school efficacy (% student body passing standardized tests at grade level) were taken from the Administrator reports at Wave I. Two binary dummy variables were created to capture whether the school was in urban, suburban or rural areas.

Protective Variables. Protective school level variables were also collected from Wave 1 School Administrator survey, including school size (small, medium, large), the presence of a parent-teacher organization, and availability of mental health services. Three binary dummy variables were created to capture the availability of mental health services: school sponsored but offsite services, referral to community, and no services were all compared to onsite services.

Individual Characteristics. *Control variables.* Binary demographic information, including biological sex (male/female), minority status (minority/non-minority), and federal assistance status (receive federal assistance/ no federal assistance), were obtained

from the Wave I In-Home survey. Additionally, we created a measure of parent's highest level of education based upon the report of the mother and/or father's education status. The education level of the parent with the more advanced education represented the parent's highest level of education. This variable is measured on a 10-point ordinal scale ranging from no formal schooling (1) to post baccalaureate education (10).

Parental incarceration. Parental incarceration was based on self-report at Wave IV on whether their biological mother/father or residential mother/father figure was ever in jail or prison for any period of time. It was also based on self report of what age the first and/or most recent incarceration occurred. Only those reporting incarceration at or before Wave I (prior to age 12 -18) were included in the parental incarceration group. Those whose parents were incarcerated before the child's birth or after Wave 1 were selected out of the analyses, following the steps outlined by Add Health Data Analysis Guidelines (Chantala, 2006).

Parent-family connectedness. To operationalize parent-family connection, we used a measure of parent-family connectedness provided in the Wave I In-home survey (Resnick et al., 1997). Resnick and colleagues report acceptable reliability ($\alpha = 0.83$) for the instrument. The measure is the average of the 13 items, by which adolescents report how close they feel to their family and parents. High values on the parent-family connection scale reflect high levels of connection as perceived by the adolescent. A prorated scale was created for those who only had one biological or resident parent figure, which was only composed of items relating to the present parent.

School connectedness. Resnick et al. (1997) also created the school connection measure, which provided an estimate of a student's sense that they are treated fairly and

cared about at school, and that they feel a part of their school. Adolescents responded to eight items on a five-point scale, which were then averaged to create a mean score that ranged from 1 - 8. The school connection scale from Wave 1 data had a reliability coefficient of Chronbach's alpha $\alpha = 0.75$ (Resnick et al., 1997). The reliability of the scale has been replicated ($\alpha = 0.80$) and the validity supported, in that all items loaded onto one factor in a confirmatory factor analysis (Eigen value = 2.81) (Waters & Cross, 2010).

Counseling. Participants reported during Wave 1 whether they received counseling in any setting (school, community, etc.) during the previous year.

Truancy. Truancy was derived from the Wave I In-home survey. Participants' self -reported of the number of days they skipped school during the 1995 - 1996 school year, resulting in a single continuous item.

Cumulative GPA (GPA). Cumulative grade point average for high school was measured on a single four-point scale, and collected from the AHAA component from the Add Health Study. This single variable was based on the transcript's cumulative grade point average, which was composed of students' grades across their main academic subjects: math, science, foreign language, English, social science, and PE.

Highest Level of Education (HLE). Highest level of education (HLE) attained was self-reported at Wave 4 on a continuous scale from not finishing 8th grade (1) to post-baccalaureate education (10).

Plan of Analyses and Hypotheses

We used weighted hierarchical multilevel modeling (Raudenbush and Bryk, 2002) to estimate predictors of individual and school level variation in educational outcomes

(Truancy, GPA, and HLE). As recommended by the Carolina Population Center (Chantala, 2006), multilevel modeling was based upon the *xtmixed* command of the Stata 12 program, utilizing scaled Wave 4 individual cross sectional sampling weights (W4_2_WC) and school sampling weights (SCHWT1) that were designed for multilevel modeling (Chantala, 2006). Cases with missing data were excluded from analyses using list-wise deletion by changing sampling weights to 0.0001, thereby excluding participants without changing the overall weighting distribution, in accordance with the Carolina Population Center's recommendations (Chantala, 2006). Continuous individual and school level variables (family connection, school connectedness, parent education level, % white teachers, % passing at grade level) were grand mean centered in order to afford parameters based on the whole sample rather than relative markers within individual schools (Raudenbush and Bryk, 2002). Categorical variables were transformed into dummy coded variables (urbanicity and school mental health services).

Preliminary Analyses Plan. We first ran a series of unconditional multilevel models (see Equation 1), to observe whether the outcomes of interest (Truancy (W1), GPA (AHAA), and HLE (W4)) varied sufficiently between schools to justify the use of multilevel modeling. In these models there was one random intercept in the level one model. Multilevel modeling was considered as justified if the intraclass correlation coefficient (ICC) was above 0.05, or if the design effect was above 2.0 (Peugh, 2010, Raudenbush and Bryk, 2002).

Equation 1: Unconditional Multilevel Model

$$Y_{ij} = \gamma_{00} + u_{0j} + r_{ij}$$

Where Y_{ij} =estimate for student i within school j 's outcome (days skipped, GPA, level of

education attained), γ_{00} = grand mean estimate of the outcome of interest; u_{0j} = school j's random error which varies independently N(0, τ_{00}); r_{ij} = student i's random error which also varies independently N(0, σ^2); i = 1, ...n_j students; and j= 1,....132 schools.

Weighted multilevel linear models. We conducted a series of five models for each outcome, with sets of variables added in each model to measure the incremental change in the amount of variance explained. With each new model, a pseudo R^2 was calculated to estimate the amount of variance accounted for by the added variables. As the models were hierarchical, in that they built on each other, only the equation for the final, full model is presented (See Equation 2).

Model 1: Is parental incarceration associated with school outcomes? Our first model tested if parental incarceration was significantly associated with the outcomes, while controlling for individual covariates (gender, minority status, federal assistance status, parent's highest level of education) and school clustering. We ran a two level model with one random intercept (β_{0j}) and five fixed coefficients for each of the outcomes (β_{ij}, $\beta_{2j,}$) and examined the significance of the model, individual coefficients, and the amount of variance explained by the model by calculating the pseudo-R^2 . We hypothesized that parental incarceration would be significantly associated with all three outcomes of interest, even after controlling for individual demographics and school clustering.

Model 2: Are school connectedness, family-parent connectedness, and counseling associated with school outcomes? We added three fixed coefficients of parent-family connectedness, school connectedness, and attending counseling ($\beta_{3j,}$) to level 1 of the previous model to test whether they predicted individual outcomes. We hypothesized that

family connectedness, school connectedness, and counseling would be significant predictors of truancy, cumulative GPA and educational attainment. We also hypothesized that parental incarceration would continue to be significantly associated with all three outcomes.

Models 3 & 4: Does school context matter? We then examined the variance in the parental incarceration slope between schools for all three outcomes. To do this, we ran a two level model with one random intercept, one random coefficient (parental incarceration, $\beta_{ij,} = \gamma_{10,} + u_{1j}$), and seven fixed coefficients ($\beta_{2j,}$ β_{3j}). The random effect of parental incarceration (u_{1j}) was added to the level 2 model with an unstructured covariance structure, to predict the variance in the parental incarceration slope between schools, and the correlation between a school's mean outcome and the parental incarceration slope (τ_{01}). For these models, the level 1 of the model remains the same, in that all other level 1 variables have fixed coefficients. We predict that the slope will vary between schools in all three models.

We next added school level covariates (urbanicity, sector, % student body passing at grade level) ($\gamma_{01,}$) and protective factors (school size, PTA presence, mental health services)(γ_{02}) to the Level 2 equation to explain the observed difference between school variance in the school's intercepts. This model allowed us to examine whether the parental incarceration and protective variables remained significant while controlling for school level characteristics. We hypothesized that small school size and having onsite mental health counseling would be positively correlated with GPA and HLE, and negatively correlated with truancy. We also predicted that parental incarceration, school connectedness, parent-family connectedness and counseling will continue to be

significantly associated with the outcomes.

Model 5: Do protective variables promote resiliency in children with incarcerated parents? In our final model, we added a fixed coefficient interaction to the Level-1 model (β_{4j}). Specifically we examined whether youth with incarcerated parents differed from other youth in the associations between protective factors, as observed in previous models, and our study outcomes. We hypothesized that observed protective factors would have a greater impact within the parental incarceration sample in that they would reduce the magnitude of the relationship between parental incarceration and the outcomes (Truancy, GPA, HLE).

Equation 2: Final Model *

$$Y_{ij} = \beta_{0j} + \beta_{1j}(PIncar) + \beta_{2j}(COV) + \beta_{3j}(PROT) + \beta_{4j}(PIncarxPROT) + r_{ij}$$
$$\beta_{0j} = \gamma_{00} + \gamma_{01}(SchoolCOV) + \gamma_{02}(SchoolPROT) + u_{0j}$$
$$\beta_{1j}(PIncar) = \gamma_{10} + u_{1j}$$
$$\beta_{2j}(COV) = \gamma_{20}$$
$$\beta_{3j}(PROT) = \gamma_{30}$$
$$\beta_{4j}(INT) = \gamma_{40}$$
$$Var(u_{0j}) = \tau_{00}$$
$$Var(u_{1j}) = \tau_{11}$$
$$Cov(u_{0j}, u_{1j}) = \tau_{01}$$

Where Y_{ij} = individual *i* in school *j* 's outcome score; β_{0j} = school j's intercept; β_{ij}, β_{2j}, β_{3j}, β_{4j} = fixed effects of parental incarceration (β_{ij}), covariates (β_{2j}), protective factors (β_{3j},), and interactions (β_{4j}), for students in school *j* on outcome; r_{ij} = is student i's random error which also varies independently N(0, σ^2), γ_{00} = average of mean outcomes across schools; γ_{10}, γ_{20}, γ_{30}, γ_{40} = mean slope for parental incarceration, covariates, protective factors, and interaction across schools; γ_{01}, γ_{02} = effect of school covariates

and protective factors on mean school intercept; u_{0j} = random variance of mean outcome between schools (*j);* and u_{1j} = random variance of mean parental incarceration slope between schools

RESULTS

Preliminary Analyses

We evaluated the effects of the unconditional multilevel models to ensure that variability between schools was sufficient to justify multi-level analyses (Peugh, 2010) for each of our major outcome variables. The intraclass correlations (*ICC*) and design effects from the unconditional models for GPA (*ICC* = 0.44) and HLE (*ICC* = 0.20) were within recommended limits. Although the ICC for truancy was lower than recommended standards (ICC = 0.03), the design effect of 5.09 indicated the appropriateness of using multilevel modeling for this variable as well (see Peugh, 2010 for detailed description).

Hierarchical multilevel linear models.

Truancy. The parental incarceration and individual covariates in Model 1 explained 1.1% of variance in the model (Wald X^2 (5) = 53.28, p < .001, pseudo-R^2 = 0.01). Parental incarceration (*b* = 1.25, *z* = 4.06, *p* < .001*)* was associated with more truancy, while being female (*b* = -0.33, *z* = -2.40, *p* = .02) and having a parent with a college degree or higher (*b* = -0.19, *z* = -4.61, *p* < .001) was associated with less truancy. Adding the protective factors (school connectedness, parent-family connectedness, and counseling) in Model 2 explained another 1.8% of the individual variance in truancy (Wald X^2 (8) = 92.12, *p* < .001, pseudo-R^2 Δ = 0.018) with higher levels of parent/family connectedness predicting less truancy (*b* = - 0.56, *z* = -4.26, *p* < .001), and receiving mental health counseling predicting more truancy (*b* = 1.86, *z* = 5.36, *p* < .001). The

addition of the variables reduced the parental incarceration slope, but the association remained significant (b = 1.07, z = 3.72, p < .001). The random effect added at Model 3 explained another 1.1% of variance, and significantly improved the model, suggesting that the relationship (or slope) between parental incarceration and truancy varies between schools (Wald X^2 (8) = 87.37, p < .001, pseudo-R^2 Δ = 0.01); the slopes ranged from 2.2 to -0.98 (u_{1j} = 1.06). The addition of the school level variables explained a minimal amount of additional variance in Model 4, only 0.05%, (Wald χ^2 (18) = 177.43, p < .001, pseudo-R^2 Δ = 0.0005). School efficacy (b = .007, z = 2.45, p = .01), school size (b = .68, z = 5.09, p < .001), and having no school services, compared to onsite services for mental health needs (b = 0.42, z = 2.20, p = .03) were significantly associated with higher rates of truancy. In Model 5, none of the interactions were significantly related to truancy. The final model contained only significant individual and school variables, and explained for 5.5% of the variance in the individual reports of truancy (Wald X^2 (11) = 127.47, p < .001, pseudo R^2 =0.0553). Parental incarceration explained for 3% of the variance in the final model (PRV = 0.03). See Table 2 for the full final model.

Cumulative Grade Point Average (GPA). The parental incarceration and control variables explained 2.4% of the variance in GPA (Wald X^2 (5) = 124.86, p < .001, pseudo-R^2 = 0.024). Parental incarceration (b = -0.35, z = -4.31, p < .001) was negatively associated with GPA, while controlling for significant covariates. Specifically, being female (b = 0.34, z = 7.87, p < .001), never receiving federal assistance (b = 0.14, z = 2.94, p =.003) and having a parent with a college degree or higher (b = 0.12, z = 7.52, p <.001) was significantly associated with higher GPAs, while being of minority status was negatively associated with GPA (b = -0.16, z = -2.50, p = .01) . The addition of

protective factors (school connectedness, parent-family connectedness, and counseling) in Model 2 explained another 0.7% of the GPA variance (Wald X^2 (8) = 199.21, $p < .001$, pseudo-R^2 $\Delta = 0.007$), with above average reports of parent-family connectedness ($b = .09$, $z = 2.04$, $p = .04$), and above average reports of school connectedness ($b = .13$, $z = 3.55$, $p < .001$) predicting higher GPAs. Self-report of receiving mental health counseling was negatively associated with the overall GPA ($b = -.31$, $z = -3.54$, $p < .001$). Parental incarceration remained significant, and it's association with GPA was only slightly reduced by the addition of the protective factors ($b = -0.31$, $z = -3.72$, $p < .001$). The addition of a random effect (u_{1j}) for parental incarceration in Model 3 explained for another 0.1% of variance in student's GPA, suggesting that the relationship (or slope) between parental incarceration and GPA significantly varied between schools from -0.07 to -0.56 (Wald X^2 (8) = 182.09, $p < .001$, pseudo-likelihood Ratio X^2 (2) test = 972.90, $p < .001$, pseudoR^2 $\Delta = 0.001$, $u_{1j} = -0.24$). The addition of the school level variables explained a minimal amount of additional variance in Model 4 (Wald X^2 (18) = 267.52, $p < .001$, pseudo -R^2 $\Delta = 0.0002$). Schools that referred to community mental health services, compared to onsite services ($b = 1.45$, $z = 2.26$, $p = .02$) and private schools ($b = 1.56$, $z = 2.18$, $p = .03$) were significantly positively associated with GPA. No interactions were significant in Model 5. The final model contained only significant individual and school variables, and explained for 3.12% variance in the individual reports of truancy (Wald X^2 (9) = 335.38 $p < .001$, pseudo-R^2 = .0312). Parental incarceration remained significant in the final model ($b = -0.32$, $z = -3.88$, $p < .001$), and explained for 0.4% of the variance in the model (PRV = 0.004). See Table 2 for details.

Highest Level of Education (HLE). In Model 1, parental incarceration was

negatively associated with the self report of highest level of education in Wave 4 (b = -0.64, z = -6.85, p <.001). Being female (b = 0.75, z = 9.85, p < .001) and having a parent with a college degree or higher (b = 0.38, z = 18.36, p < .001) was associated with a higher HLE, and all together these three variables explained 9.4% of the variance in HLE (Wald X^2 (5) = 524.43, p < .001, pseudo-R^2 = 0.094). In Model 2, above average school connectedness was positively correlated to HLE (b =0.33, z = 7.86, p < .001), while counseling was negatively correlated with HLE (b = -0.45, z = -3.64, p< .001). The model accounted for another 1.3% of HLE variance (Wald X^2 (8) = 815.11, p < .001, pseudo-R^2 Δ = 0.013). Parental incarceration remained significant, and the association was only slightly reduced with the addition of the variables (b = -0.56, z = -5.76, p <.001). The random effect added at Model 3 was not significant, and therefore was not included in the later models (pseudo-likelihood Ratio X^2 test = 1.84, p = 0.09). In Model 4, the presence of a school parent-teacher organization was positively associated with HLE (b = 0.37, z = 2.04, p = 0.04), and explained 0.3% of the variance in the model (Wald X^2 (18) = 1086.96, p < .001, pseudo-R^2 Δ = 0.034). In Model 5, there was a significant interaction between school connectedness and parental incarceration, in that parental incarceration decreased the magnitude of the relationship between school connectedness and HLE (b = -0.28, z = -3.38, p = .001). The addition of the interaction accounted for an additional 0.09% variance (Wald X^2 (19) = 1175.48, p < .001, pseudo-R^2 Δ = 0.0009). The final model contained only significant individual and school level variables, and explained for 10.6 % of the variance in the individual reports of highest level of education (Wald X^2 (7) = 604.18, p < .001, pseudo-R^2 = .106). Parental incarceration remained significant (b = -0.61, z = -6.17, p <.001) and accounted for 0.4% of the variance in the model. See Table

2 for the full final model.

Discussion

This study had two main objectives. The first was to examine whether parental incarceration was associated with poorer academic outcomes. The second was to identify individual and school characteristics that promote academic success, and to determine if these characteristics had different influences on youth with incarcerated parents than those without incarcerated parents.

Objective 1: Parental Incarceration Associated with Poorer Academic Outcomes

Our study revealed the pervasive association of parental incarceration with poor school outcomes using a nationally representative sample. Using weighted multilevel modeling, we found that parental incarceration significantly predicted truancy, GPA, and HLE while controlling for adversities associated with school failure and parental incarceration (poverty, gender, minority status, parental education). Additionally, parental incarceration continued to predict all three outcomes, even when an individual's report of school connectedness, family connectedness, attending counseling, and a myriad of school characteristics were added to the model. This suggests that there is a unique risk associated with having a parent incarcerated during childhood that is not explained by co-existing contextual adversities (poverty, minority status, low parent education, attending counseling), a lack of sense of belonging at school or in the family (school connectedness, family connectedness), or the quality of the school environment (private vs. public, efficacy, or availability of mental health services).

We observed a significant interaction between parental incarceration and school connectedness when predicting highest level of education. The relationship between

school connectedness and a student's pursuit of higher education was reduced when the adolescent had a parent incarcerated. While school connectedness appears to be a protective factor for the general population, it has a minimal impact on students with incarcerated parents' pursuit of higher education. This finding is counter to our hypotheses, and describes a distressing situation for these high risk youth, in that the protective effect of school connectedness does not continue into young adulthood for adolescents with incarcerated parents in the way it does for the general student body. Even if an adolescent enjoys academics and feels accepted and supported in their environment, if they have a parent incarcerated, their pursuit of higher education is no different than peers with a parent incarcerated who feel disconnected from school during adolescence. No significant interactions were observed while predicting truancy or cumulative GPA. This suggests the individual and school characteristics promote (or prevent) success equally across those with and without incarcerated parents when they are within the school setting.

Objective 2: Individual and School Characteristics as Protective Factors

This study identified a number of individual and school characteristics that were associated with better academic outcomes. In general, the protection afforded by these characteristics seemed to operate for children of incarcerated parents in much the same way as for other youth. These findings indicate that home and school connectedness do matter for children of incarcerated parents with regards to truancy and GPA. However, these factors did not particularly impart a special boost unique to the children of incarcerated parents or fully account for the poorer academic performance observed in this group.

Parent-Family Connectedness. During adolescence, feeling close to one's parent and family has a significant impact on school achievement (Jeynes, 2005; Witherspoon, Schotland, Way & Hughes, 2009) and delinquency (Resnick, Harris & Bloom, 1993). This was reflected in our analyses, in that as parent-family connectedness increased, rates of truancy decreased and GPA increased in those with and without parental incarceration. These findings provide insight into potential prevention efforts for adolescents with a history of parental incarceration, as adolescents who had above average reports of parent-family connectedness reported less truancy and higher GPAs then those who reported average or below average rates of parent-family connectedness. Based on the coefficients from the final models, students with just half a point above the average parent-family connectedness score negated the risk associated with parental incarceration on truancy, and those with three points above average on parent-family connectedness negated the risk associated with parental incarceration on GPA (See Table 2). This suggests increasing the amount of family closeness, communication, and sense of belonging of an adolescent with incarcerated parents would be an excellent first step for either preventing or reducing truancy and improving achievement.

School Connectedness. School connectedness promoted higher GPAs and higher levels of education in the general population. In youth with a history of parental incarceration, school connectedness was only protective in regards to their cumulative GPA. With regards to GPA, scoring three points or higher above the grand mean average of school connectedness cancelled the negative impact of parental incarceration (See Table 2). However, with regards to the highest level of education, the significant interaction between parental incarceration and school connectedness revealed that having

a parent incarcerated negated the protective effect of above average levels of school connectedness that was observed in the general population (See Figure 2). Students without incarcerated parents' highest level of education increased by almost half a point (b=0.40) for every additional point above the school connectedness average, but students with incarcerated parents' highest level of education increased by less than a tenth of a point (b = 0.09). School connectedness in high school has long-term effects on the general population, in that it promotes earning a higher GPA, which would lead to becoming accepted into college, setting the path for a successful post-secondary education. Somewhere along the line, the domino effects of having a parent incarcerated interrupt this same process from occurring for students who have high connectedness to school while also having a parent incarcerated.

There are a myriad of explanations for what could prevent a motivated student who experienced parental incarceration from continuing their education. Although we controlled for socioeconomic status at Wave 1, students with incarcerated parents may have drastic changes in the economic resources available to them in early adulthood. The considerable strain due to the lack of income, time, and emotional energy of having a parent incarcerated may prevent the family from being able to pay for college, apply for school loans, or make it necessary for the student to find employment to contribute to the household. Additionally, parent's level of education significantly predicted highest level of education, and the prison population has less high school and college degrees than the general population (Glaze & Maruschak, 2008). This would suggest that those with a parent incarcerated may also have at least one parent with a lower than average amount of education, and therefore may live in a family with lower educational aspirations or

with less knowledge of what is necessary to enroll and complete post-secondary education. Therefore, transition planning and ongoing support from school staff during post-secondary education may be the missing link for academically motivated students with incarcerated parents.

Counseling. Contrary to hypotheses, youth reports of receiving counseling were positively associated with truancy and negatively associated with cumulative GPA and HLE. Counseling was not a protective factor for any of the school outcomes. This surprising result may reflect referral patterns rather than the benefits of counseling. It is plausible that the youth who are referred for counseling are likely to be those with academic and school problems. The dataset did not afford information regarding the types or outcomes of the counseling. The benefits of counseling may be better measured by the school-level indicator that counseling is made available to youth (see discussion below of school level variables). It is unlikely that a causal relationship exists between receiving any form of counseling and poor academic experiences.

School Characteristics. Results indicated that small schools (1-400) protect against truancy for adolescents with and without parental incarceration. It is likely that staff from smaller schools have greater control over ensuring individual students attended, or at least were more aware when students did skip school and were able to prevent repeated truancy through contacting caregivers and increasing monitoring. This is consistent with previous reviews, which find that smaller secondary schools have greater "sticking power" (Leithwood & Jantzi, 2009).

In regards to mental health services, schools that either provided counseling or referred youth to community resources were beneficial in comparison to those schools who did

not provide such services. Schools with onsite mental health counseling had lower rates of school wide truancy compared to schools with no mental health services, plausibly because mental health counselors had direct access to students with problem behaviors in the environment that the problems were occurring. As with school size, and onsite mental health counseling is especially important for youth with incarcerated parents, as they many need more adult monitoring and accountability than their peers. Homes coping with a history of incarceration may have higher amounts of family strain, chaos, and reduced monitoring (Dallaire, 2007). The adolescent may skip school without the parents' knowledge, or in the case of extreme economic hardship, skip school with the parent's knowledge in order to earn money or to watch younger siblings while the parent attends work. Whether this truancy is due to increased acting out or increased responsibility, they both require increased monitoring and support from the school.

The provision of counseling opportunities likewise evidenced positive effects in terms of cumulative GPAs, though different services. Schools that referred youth to the community for mental health services, compared to providing onsite mental health services, had higher average cumulative GPAs. Hypothetically, when a student has in-school counseling, this may take away from time usually spent in class, which interferes with learning. Additionally, students may not be able to focus on classroom activities when anticipating or transitioning back from a particularly emotional or stressful counseling session. Given the emotional strain and the perceived stigma that adolescents of incarcerated parents experience, being referred to a community mental health provider may be a more appropriate way of addressing the mental health needs of adolescents who are not engaging in truancy. Referrals connect students with needed services without

interfering with their academics or increasing a students' sense of shame or stigma, for having to be called out of class to see a counselor. Community referrals may also be more effective, as students may have access to more qualified professionals who can more easily engage the family in the therapeutic process.

The presence of a parent-teacher organization was the only school characteristics that had long term impacts on adolescent's life outcomes, as it predicted higher levels of educational attainment. The presence of a parent teacher organization suggests a culture in which parents are encouraged to take an active role in their child's education. Parent-school relations and parent involvement are predictive of greater academic achievement, especially in high risk population (Jeynes, 2005). Unlike school connectedness, the protective power of a parent-teacher organization was present in those with and without incarcerated parents. This finding supports our recommendation that providing students and their caregiver practical opportunities for involvement, guidance and support is an effective intervention for students wishing to pursue a post-secondary education.

Limitations

Although Add Health was an appropriate dataset for our study, our analyses and conclusions were limited by the nature of data collection. First, the "parental incarceration" variable is retrospective. The items are self-report and therefore it is possible that participants withheld information on incarceration, or misremembered their age at the parental incarceration. Additionally, a small percentage of participants were excluded due to missing information on their age at the parental incarceration. We would have more confidence in patterns if parents' court records, the length of separation, and the nature of the parent's arrest were available. Understanding the extent of the parent's

criminality would provide better insight into the potential pathways of risk, and would have allowed us to explore differences among the sample of adolescents with parents incarcerated.

We cannot assume causality between parental incarceration and school outcomes, only association. Data from elementary and middle school transcripts were not provided, so we could not control for the participant's academic performance prior to parental incarceration. While our results confirm a small but significant relation between academic goals and parental incarceration, we cannot assume that parental incarceration causes a decline in the participants' academic trajectory.

As with all longitudinal studies, the entire initial sample did not persist through all of the data collection waves. The motives or contexts for dropouts were likely varied, and it is possible that some of those who were difficult to contact were disconnected from families or schools, or otherwise differed from the existing sample. This is especially problematic for the transcript data, as participants consented to participation in this portion of the data collection. Those with lower GPAs or who did not complete high school may have been less motivated to allow their transcript information be included in the study, again potentially excluding the most at risk individuals.

Conclusion

This study found that the incarceration of a mother or father at or before early adolescence was associated with higher rates of truancy, lower cumulative GPAs, and less years of education attained. The association was maintained through several successive models that introduced variables that could explain the association. The robust endurance of the parental incarceration effect through these successive models

indicates that the educational challenges for this group are not easily explained by collateral risk and protective factors. This uniquely contributes to the existing literature, as it is the first to demonstrate this risk in adolescents with both incarcerated mothers and fathers, while controlling for school characteristics as well as adolescents' report of school and parent-family connectedness.

The finding that the highest level of educational achievement evidenced an interaction effect is particularly troublesome as it indicates that while feeling closely attached to school serves as a positive predictor of later academic achievement for other students, it has no discernable effect for children of incarcerated parents. This effect, or lack of effect, suggests that adolescents with a history of parental incarceration may require additional supports within the school setting when displaying an interest in continuing their education beyond high school. These supports may include transition planning, family meetings, SAT/ ACT preparation, identifying and assisting with scholarship and loan applications, and general guidance through the college admission process. Additionally, due to family responsibilities or lack of resources, the student may have to take a non-traditional path to attending college, such as part-time enrollment, online courses, or attending a community college before applying to a four-year university. Schools should connect adolescents to an adult, either within the school or the community, who is well versed in the challenges related to pursing post-secondary education. While a school counselor traditionally plays this role, an invested teacher, administrator, or even community member could provide this guidance.

In general, characteristics that promoted success for children with incarcerated parents operated similarly for those who did not have an incarcerated parent. These

results add to the existing literature regarding the importance of school and family connection for promotion of academic success. Efforts to promote a youth's sense of connection and belonging both within the family and within the larger community make sense for all youth. The present results likewise indicate that small school sizes and access to mental health services promote positive academic outcomes. Results also suggest that contextual differences regarding the type of mental health services make a difference: onsite school counseling may be more beneficial for problematic behaviors such as truancy as it affords a context for increased monitoring and intervention. Referrals to community services may be more beneficial for student academic outcomes as they may provide less interruption to a student's education and achievement. Our finding that these resources were as helpful to children of incarcerated as to other youth with similar high-risk profiles indicates that specialized in-school interventions for youth with incarcerated parents may not be necessary. Coupled with our finding that youth with incarcerated parents have poorer outcomes than other youth, even after accounting for numerous risks, the findings indicate the importance of knowing who these youth are and then ensuring that they receive service and support using the tools and knowledge that school have for forging connectedness with students and support for positive home connection.

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Table 1.Weighted Participant and School Descriptive Statistics

Variable	Mean (SE)	Percentage (Weighted N)
Individual Characteristics		
Age (Wave1)	15.9(.03)	
Average Family Connectedness	4.19(.01)	
Average School Connectedness	3.77(.01)	
Transcript GPA (All 4 Years)	2.57(.02)	
Total Days Skipped School (Truancy)	2.60 (.15)	
Highest Level of Education (HLE)	6.02(.04)[a]	
Wave 1 GPA	2.77(.01)	
Sex (Male)		51.7% (35,853)
Federal Aid Status		10.3% (7,577)
Minority Status		46.0% (33,247)
Highest Level of Parent Education: Didn't Go to School		0.3% (154)
8th grade or less		0.6% (3,431)
> 8th grade/ Didn't graduate High School (HS)		10.9 % (6,732)
Vocational instead of HS Degree		0.5% (239)
High School Graduate		32.1% (14,718)
GED		3.8% (3,762)
Business/ Trade/Vocational School Post HS		6.6% (4,941)
Attended/ Did not graduate college		13.3% (11,246)
Graduated 4 year college		18.8% (16,434)
Professional training beyond 4 year College		7.3% (9,792)
Receive Counseling (Yes)		13.5% (8,701)
Parental Incarceration (Yes)		12.1% (9,063)
School Characteristics		
Percentage White Teachers (Continuous)	77.45 (.42)	
Percentage passing at grade level (Continuous)	58.81(.30)	
Parent Teacher Organization at school		92.6% (67,009)
School Response to Mental Health Needs		
Onsite Mental Health Counseling(MHC)		61.8% (49,701)
Offsite/ In District MHC		2.1% (120)
Referral to Community		33.5% (19,041)
Nothing		4.5% (2,586)
School Size: Small (1-400)		6.2% (3,459)
Medium (401-1000)		38.4% (21,285)
Large (1001-4000)		55.3% (46,704)
Urbanicity: Urban		37% (26,635)
Suburban		52.5% (30,790)
Rural		10.2% (4,959)
Type(Public)		95.3% (68,959)

Note: All of above statistics, except for GPA and Highest Level of Education, are representative of the sample used in the Truancy model, as it had the largest sample size. Weighted N's for the three samples are as follows: Truancy Weighted N = 71,447.62; HLE Weighted N = 69,082; Cumulative GPA Weighted N = 46,045. [a] Highest level of education is an ordinal category 6 represents attending but not graduating from college.

Table 2. Fixed Effects Estimates (Top) and Variance-Covariance Estimates (Bottom) for Final Weighted Multilevel Models of the Predictors of Truancy, Cumulative Grade Point Average (GPA), and Highest Level of Education (HLE).

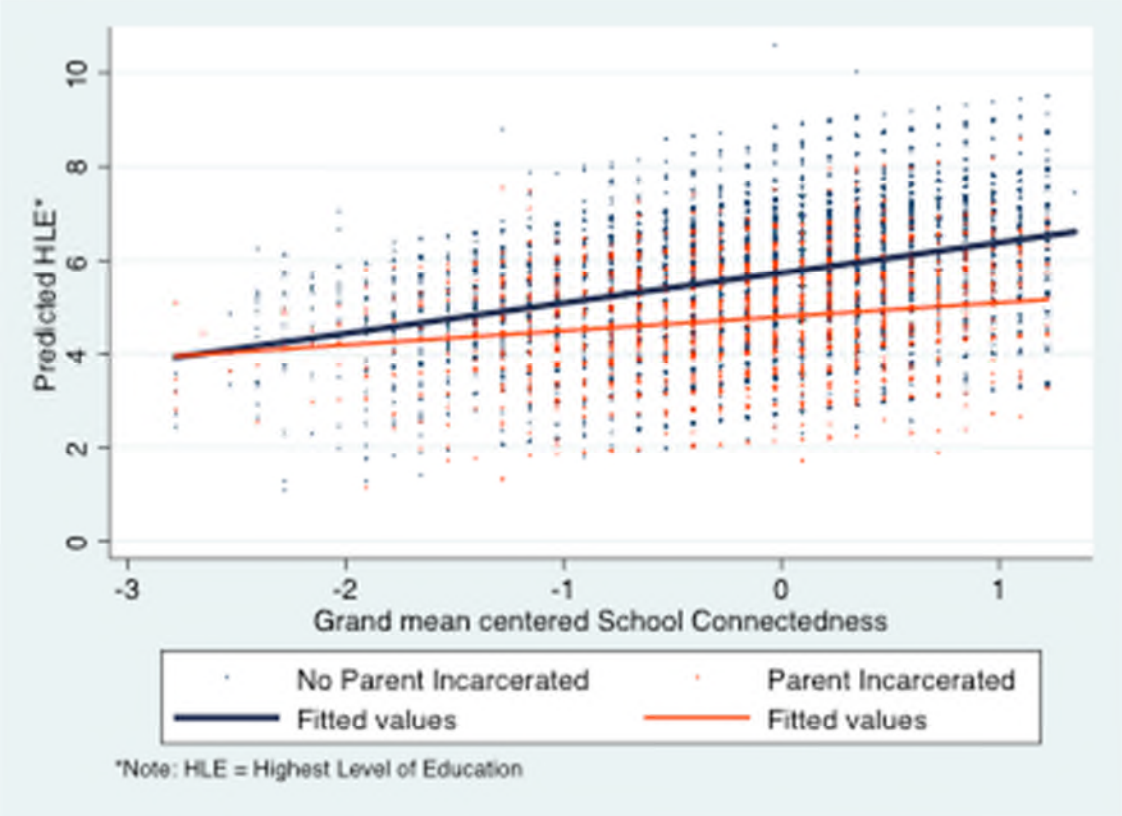
			Truancy	GPA	HLE
Regression Coefficients (Fixed Effects)			*b* (SE)	*b* (SE)	*b* (SE)
	Independent Variable				
		Parent Incarceration	0.45 (.18)**	-0.32 (.08)***	-0.61 (.10)***
	Individual Covariates				
		Sex	-0.73 (.15)***	0.36 (.05)***	0.75 (.08)***
		Parent HLE	-0.14 (.06)**	0.12 (.02)***	0.38 (.02)***
		Minority		-0.17(.06)**	-
		Federal Aid	0.51(.13)***	-	-
	Individual Protective Factors				
		Counseling (1=yes)	1.33(.32)***	-.31(.09)***	-0.45 (.12)***
		School Connectedness		.12(.04)**	0.40 (.04)***
		Parent-Family Connectedness	-.76(.13)***	.13(.04)**	-
	School Covariates				
		% Passing at Grade Level	.006(.003)^{t}		
		Type	-	.70(.64)*	-
	School Protective Factors				
		PTA	-	-	-0.18 (.06)**
		School Size	0.81(.13)***	-	-
		Offsite mental health services	-	-	-
		Referral	-	0.26(.08)**	-
		No mental health services	0.35(.19)^{t}	-	-
	Interactions				
		School Connectedness x Parental Incarceration	-	-	-0.31(.08)***
	Intercept		.30(.32)	0.52	4.92***
Variance Components (Random Effects)			SD (CI)	SD (CI)	SD (CI)
	Level 2 Between School Standard Deviation (intercept)		.82(.64-1.1)*	1.77(1.0-2.9)*	1.23 (0.5-3.0)*
	Level 1 Between Individual Standard Deviation (residual)		5.23 (4.9-6.1)*	2.15(1.8-2.6)*	2.79 (2.3 - 3.3)*
	Parent Incarceration (PI) Slope Standard Deviation		.82(.64-1.1)*	1.77(1.0-2.9)*	-
	Correlation of the intercept and PI slope (parent slope x intercept)		0.16 (-.36-.05)	.19(-.90-.95)	-
Model Summary Statistics					
	Wald Chi Square statistic		127.47***	335.38***	604.18***
	Number of estimated parameters		11	9	7

Note: $^{t}p \leq .08$ *$p \leq .05$, **$p \leq .01$ *** $p \leq .001$

Parent Incarceration= parent incarceration status (1 = Parent incarcerated at or prior to wave 1); Sex = biological gender (1= female) ; Parent HLE = Grand mean centered parent's highest level of education ; SES = Socioeconomic status as indicated by self report of household receiving federal assistance (1 = no federal assistance); Counseling = Self report receiving mental health counseling (1 = Counseling); Parent-Family

Connectedness = mean centered parent-family connectedness; Offsite(1 = Offsite school sponsored mental health services) No mental health services (1 = no school sponsored mental health services)

Figure 1. Interaction effect of parental incarceration and school connectedness on highest level of education (HLE).



Appendix A. Description of Data

A.1 Group membership of adolescents in relation to parental incarceration

		Unweighted N's
Included	No parent incarcerated	13,262
	Parent incarcerated before or at Wave 1	1,723
Excluded	Incarcerated and released before birth	136
	Age at incarcerated unknown	450
	Incarcerated before birth but release date unknown	113
	Incarcerated and released before Wave	17
	Wave 4 data not collected	5071

A.2 Missing Data

Variable	**Truancy**	**GPA**	**HLE**
Wave 4 Data	5071	5071	5071
Gender	26	26	26
Minority	12	12	12
Receive Federal Aid	377	377	377
Parent Education	676	840	676
Average School Connectedness	293	293	293
Average Family Connectedness	30	30	30
Receive Counseling	1	1	1
% White Teachers	683	320	683
PTA	0	0	0
Mental Health Counseling	244	623	244
Size	0	0	0
School Type	0	0	0
Urbancity	0	0	0
Truancy	21		
HLE			0
Transcript GPA		4590	

A. 3 Survey Questions from AddHealth

Parental Incarceration Items: Wave IV, Section 2

1. (Has/did) your biological mother ever (spent/spend) time in jail or prison?
2. How old were you when your biological mother went to jail or prison?
3. How old were you when your biological mother was released from jail or prison (most recently)?
4. (Has/did) your biological father ever (spent/spend) time in jail or prison?
5. How old were you when your biological father went to jail or prison?
6. How old were you when your biological father was released from jail or prison (most recently)?
7. (Has/did) your (mother figure) ever (spent/spend) time in jail or prison?

8. How old were you when your (mother figure) went to jail or prison?
9. How old were you when your (mother figure) was released from jail or prison (most recently)?
10. (Has/did) your (father figure) ever (spent/spend) time in jail or prison?
11. How old were you when your (father figure) went to jail or prison?
12. How old were you when your (father figure) was released from jail or prison (most recently)?

Individual Protective Variables:
School Connectedness: (Wave 1, Section 5; 35)
1. You feel close to people at your school.
2. You feel like you are part of your school.
3. You are happy to be at your school.
4. The teachers at your school treat students fairly.
5. You feel safe in your school.
6. Since school started this year, how often have you had trouble getting along with your teachers?
7. Since school started this year, how often have you had trouble getting along with other students?
8. How much do you feel that teachers care for you?

Parent-Family Connectedness: (Wave 1, Section 12 - 18; 35)
1. How much do you feel that people in your family understand you?
2. How much do you feel that you and your family have fun together?
3. How much do you feel that your family pays attention to you?
4. How close do you feel to your residential mother?
5. How close do you feel to your residential father?
6. How much do you think she cares about you?
7. How much do you think he cares about you?
8. Most of the time, your mother is warm and loving toward you.
9. Most of the time, your father is warm and loving toward you.
10. Overall, you are satisfied with your relationship with your mother.
11. Overall, you are satisfied with your relationship with your father.
*12. How close do you feel to your biological mother?
*13. How close do you feel to your biological father?
*only used if subject didn't respond to same question for residential mother/father.

Counseling: (Wave 1; Section 7)
In the past year, have you received psychological or emotional counseling?

Outcomes:
Truancy (Wave 1; Section 5) How many times have you/did you skip school for a full day without an excuse?
GPA (AHAA Dataset) Overall cumulative grade point average from transcript
Highest Level of Education (Wave 4; Section 9) What is the highest level of education that you have achieved to date?

Appendix B. Complete Results of Weighted Multilevel Models 1-6.

B. 1 *Fixed Effects Estimates (Top) and Variance-Covariance Estimates (Bottom) for Hierarchical Weighted Multilevel Models of the Predictors of Truancy.*

Truancy			Model 1	Model 2	Model 3	Model 4	Model 5
Regression Coefficients (Fixed Effects)							
	Intercept		1.12 (.14)***	1.49(.28)***	1.17(.25)***	1.23(.24)***	0.84(.59)
	Covariates						
		Sex(Female=1)		-0.33(.14)*	-0.44 (.15)**	-0.45(.15)**	-.43(.15)**
		Parent Education		-0.19(.04)***	-0.18(.04)***	-0.18(.04)***	-.18(.04)
		Minority (1=minority)		0.04(.16)	.09(.16)	0.06(.14)	-.02(.14)
		Federal Aid (1=noFAid)		-0.44(.13)**	-0.44(.15)**	0.36(.14)**	.36(.14)**
	Parental Incarceration (1=incar)			1.25(.31)***	1.07(.29)***	0.69(.24)**	.78(.24)**
	Individual Protective Factors						
		Counseling(1=yes)			1.86(.25)***	1.85(.35)***	1.83(.35)***
		SchoolConnectedness			-.19(.19)	-.17(.18)	-.16(.18)
		FamilyConnectedness			-.56(.13)***	-.56(.13)***	-.56(.13)***
	School Covariates						
		% White Teachers					-0.0009(.004)
		% Passing at grade level					-.007(.003)**
		Type (1 = Private)					-.32(.27)
		Suburban					-.49(.26)
		Rural					-.09(.29)
	School Protective Factors						
		PTA (1= yes)					0.03(.07)
		Offsite					0.33(.26)
		Referral					-.10(.20)
		Nothing					.42(.19)*
		School Size					.68(.13)***
Variance Components (Random Effects)							
	Level 2 Between School		1.13(.93-	1.05(0.9-	0.98(0.8-1.2)*	.88(.70-1.07)*	.70(.57-.87)*

	Variance	1.36)*	1.3)*			
	Level 1 Between Individual Variance	5.79(5.0,6.7)*	5.8(5.0,6.7)*	5.70(4.9, 6.6)*	5.67(4.9, 6.6)*	5.67(4.9, 6.6)*
	sd(ParentIncar)				.88(.70-1.07)*	.70 (.57-.87)*
	Corr (parent slope, _cons)				.36(.002-.63)*	.22(-.14-.53)
Model Summary						
	Wald Chi Square Test		53.28***	92.12***	87.37***	177.43***
	Number of estimated parameters		5	8	8	18

B. 2 *Fixed Effects Estimates (Top) and Variance-Covariance Estimates (Bottom) for Hierarchical Weighted Multilevel Models of the Predictors of Cumulative Grade Point Average (GPA).*

GPA	Model 1	Model 2	Model 3	Model 4	Model 5
Regression Coefficients (Fixed Effects)					
Intercept	1.84***	1.28(.30)***	1.33(.29)***	1.33(.29)***	-1.25(1.64)
Covariates					
Sex(Female=1)		0.34(.04)***	0.36(.05)***	0.36(.05)***	0.36(.05)***
Parent Education		0.12(.02)***	0.11(.02)***	0.11(.02)***	0.11(.02)***
Minority (1=minority)		-0.16(.06)**	-0.17(.06)**	-0.17(.06)**	-0.17(.06)**
Federal Aid (1=noFAid)		0.14(.05)**	0.07(.05)	0.07(.05)	0.07(.05)
Parental Incarceration (1=incar)		-0.35(.08)***	-0.31(.08)***	-0.32(.08)***	-0.32(.09)***
Individual Protective Factors					
Counseling(1=yes)			-0.31(.09)***	-0.31(.09)***	-0.31(.09)**
SchoolConnectedness			0.13(.04)***	0.13(.04)***	0.12(.04)**
FamilyConnectedness			0.09(.05)*	0.10(.05)*	0.13(.04)**
Interactions					
PIxSC					
PIxFC					
PIxCounseling					
School Covariates					
% White Teachers					-0.009(.01)
% Testing grade level					0.004(.005)
Type (1 = Private)					1.55(.71)*
Suburban					-0.26(.56)
Rural					0.50(.47)
School Protective Factors					
PTA (1= yes)					-0.25(.20)
Offsite					-2.08(1.2)

		Referral					1.44(.64)*
		Nothing					0.93(.77)
		School Size					0.34(.40)
Variance Components (Random Effects)							
	Level 2 Between School Variance		1.92(1.17,3.18))*	1.87(1.12,3.12)*	1.84 (1.11,3.06)*	1.83(1.09,3.04)*	1.64(1.06,2.52)*
	Level 1 Between Individual Variance		2.19(1.80,2.65)*	2.16(1.78,2.62)*	2.15(1.77,2.62)*	2.15(1.77,2.62)*	2.15(1.77,2.62)*
	sd(ParentIncar)					0.24(0.07,0.86)*	
	Corr (parent slope, _cons)					-0.65(-0.56,0.97)	
Model Summary							
	Wald Chi Square Test			124.86***	199.21***	182.09	276.52***
	Number of estimated parameters			5	8	8	18

B. 3 *Fixed Effects Estimates (Top) and Variance-Covariance Estimates (Bottom) for Hierarchical Weighted Multilevel Models of the Predictors of Highest Level of Education.*

Highest Level of Education	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Regression Coefficients (Fixed Effects)						
Intercept	5.85(.18)***	4.64(.22)***	4.70(.22)***	4.69(.22)***	4.20(1.7)*	4.21(1.53)**
Covariates						
Sex(Female=1)		0.75(.07)***	0.76(.08)***	0.76(.08)***	0.75(.08)***	0.75(.08)***
Parent Education		0.38(.02)***	0.37(.02)***	0.37(.02)***	0.37(.02)***	0.37(.02)***
Minority (1=minority)		0.07(.11)	0.07(.11)	0.07(.11)	.07(.11)	0.06(.11)
Federal Aid (1=noFAid)		0.16(.09)	0.10(.09)	0.10(.09)	0.08(.10)	0.08(.10)
Parental Incarceration (1=incar)		-0.64(.09)***	-0.56(.10)***	-0.57(.10)***	-0.57(.10)***	-0.58(.10)***
Individual Protective Factors						
Counseling(1=yes)			-0.45(.12)***	-0.45(.12)***	-0.45(.12)***	-0.43(.13)**
SchoolConnectedness			0.33(.04)***	0.33(.04)***	0.35(.04)***	0.40(.04)***
FamilyConnectedness			0.04(.05)	0.04(.05)	0.03(.05)	0.03(.05)
Interactions						
PIxSC						-.28(.08)**
PIxFC						*ns*
PIxCounseling						*ns*
School Covariates						
% White Teachers					-0.002(.007)	-0.002(.008)
% Passing at grade level					-0.007(.004)	-0.007(.004)
Type (1 = Private)					.14(.64)	.14(.64)
Suburban					-.40(.62)	-.39(.62)
Rural					-.53(.61)	-.52(.61)
School Protective Factors						

		PTA (1= yes)					.37(.18)*	.36(.18)*
		Offsite					-.40(.51)	-.39(.51)
		Referral					.08(.28)	.08(.28)
		Nothing					.05(.46)	.04(.46)
		School Size					.21(.29)	.20(.29)
Variance Components (Random Effects)								
	Level 2 Between School Variance		1.45(.87-2.14)*	1.31(0.6-3.1)*	1.27(.56-2.9)*	1.27(.56 - 2.9)*	1.18 (.45-3.1)*	1.18(.45-3.1)*
	Level 1 Between Individual Variance		2.95(.2.5-3.5)*	2.81(2.3-3.3)*	2.79(2.4-3.3)*	2.79(2.3-3.3)*	2.78(2.3-3.3)*	2.78(2.3-3.3)*
	sd(ParentIncar)					0.07(.00-41.1)		
	Corr (parent slope, _cons)					*ns*[t]		
Model Summary								
	Wald Chi Square Test			524.43***	815.11***	814. 84***	1086.96***	1175.48***
	Number of estimated parameters			5	8	8	18	19

Appendix C. Unreported Analyses

C.1 Weighted hierarchical multilevel models of the predictors of school trouble (suspension + expulsion).

School Trouble	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
_Intercept	0.26 (.03)	0.55(.05)***	0.41(.05)***	0.42(.05)***	0.65(.10)***	
Individual Covariates						
Bio Sex(Female=1)		-0.15(.02)***	-0.16(.02)***	-0.16(.03)***	-0.15(.02)***	
Parent Education		-.03(.004)***	-0.03(.004)***	-.03(.004)***	-.03(.004)***	
Minority		.13(.02)***	0.14(.02)***	.14(.02)***	.12(.02)***	
Federal Aid (1=noFAid)		-.01(.02)	0.02(.03)	.02(.03)	.02(.03)	
Parental Incarceration						
Parental Incarceration		.15(.03)***	0.14(.03)***	0.13(.03)***	.14(.03)***	
Counseling(1=yes)			0.16(.03)***	0.16(.03)***	.16(.03)***	
School Connectedness			-0.03(.02)	-.03(.02)	-.03(.02)	
Family Connectedness			-0.05(.03)*	-.05(.03)*	-.05(.03)*	
Interactions						
PIxSC						*ns*
PIxFC						*ns*
PIxCounseling						*ns*
School Components						
%White Teachers					-.003(.00)***	
PTA					0.07(.01)***	
% Testing Grade Level					.0002(.0004)	
School Mental Health Services					-.01(.009)	
School Size					.01(.02)	
School Type					-0.4(.03)	
Urbanicity					.005(.02)	
Variance Components (Random Effects)						
Level 1 Between Individual Variance	0.17(.01)	0.13(.01)	0.13(.01)	.12(.01)	.10(.01)	

Level 2 Between School Variance	0.53(.02)	0.53(.02)	0.52(.02)	.52(.02)	.52(.02)	
Parent Incarceration Slope variance level1				.12(.02)	.16(.02)	
Corr (parent slope, _cons)				.03(.19)	-.12(.17)	

Note: In initial analyses, two additional outcomes were predicted through multilevel modeling. However, school trouble was excluded from the manuscript, as upon further reflection we determined it was not a valid assessment of the amount of trouble a student got into during the school year. Expulsion and suspension were both dichotomous variables (Have you ever been (expelled, suspended) this past school year - Yes/No). A student who was suspended once would be treated the same as a student who had been expelled or suspended multiple times over the course of a school year. Therefore this outcome was excluded from the manuscript.

C.2 Weighted hierarchical multilevel models of the Predictors of Wave 1 GPA

GPA_Wave1	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
_Intercept	2.62(.14)***	2.16(.15)***	2.16(.14)***	2.17(.13)***	1.10(.58)	1.37(.07)***
Individual Covariates						
Bio Sex(Female=1)		0.23(.03)***	0.20(.02)***	0.20(.02)***	0.20(.02)***	0.06(.03)
Parent Education		0.08(.01)***	.08(.006)***	0.07(.006)***	0.07(.006)***	-0.02(.01)*
Minority		-0.10(.05)	-0.09(.05)	-0.10(.06)	-0.10(.06)	-0.10(.06)
SES (1=noFAid)		0.19(.06)**	0.22(.06)***	0.22 (.06)***	0.22 (.06)***	0.22 (.06)***
Parental Incarceration						
Parental Incarceration		-0.23(.03)***	-0.15(.05)**	-0.25(.10)**	-0.25(.09)**	-0.25(.09)**
Individual Protective						
Counseling(1=yes)			-0.13(.06)*	-0.13(.06)*	-0.13(.06)*	-0.13(.06)*
School Connectedness			0.62(.08)***	0.62(.08)***	0.62(.08)***	0.62(.08)***
Family Connectedness			-0.13(.05)**	-0.13(.04)**	-0.13(.04)**	-0.13(.04)**
Interactions						
PIxSC						*ns*
PIxFC						*ns*
PIxCounseling						*ns*
School Characteristics						
%White Teachers					.0006(.003)	.0006(.003)
PTA					-.10(.06)	-.10(.06)
% Testing Grade Level					.008(.003)**	.008(.003)**
School Mental Health Services					.03(.04)	.03(.04)
School Size					.15(.12)	.15(.12)
School Type					.35(.20)	.35(.20)
Urbanicity					0.06(.10)	0.06(.10)
Variance Components (Random Effects)						
Level 1 Between Individual Variance	0.95(.33)	.89(.33)	0.89(.32)	0.86(.29)	0.75(.28)	0.75(.28)

Level 2 Between School Variance	1.21(.12)	1.18(.11)	1.07(.11)	1.07(.11)	1.07(.11)	1.07(.11)
sd(ParentIncar)				0.58(.46)	0.53(.54)	0.53(.54)
Corr (parent slope, _cons)				0.86(.18)	0.85(.29)	0.85(.29)

Note: Wave 1 GPA was eventually excluded from the manuscript as there was a wide range between the number of grades that made up a students overall GPA. Some student's GPA was averaged from four classes and some were averaged from two classes. Additionally, cumulative GPA from the transcript provided a more valid estimate of the participant's academic achievement than self report of grades during the school year.

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Dear Dr. Loper,

The intent of this letter is to document Emily Nichols's contributions to the manuscript *Evaluating the Content and Reception of Messages from Incarcerated Parents to Their Children.* As the second author, Emily played an essential role in the project and manuscript preparation. In addition to attending all data collection sessions conducted by UVA staff, Emily created a coding scheme for the videos we were evaluating, oversaw training and reliability on coding, and ran reliability kappas for all of the videos. Throughout the manuscript preparation process, Emily provided insight and edits to the manuscript. She made substantial revisions to the literature review, including sections on how contact impacts youth and parents and new forms of contact. Emily was integral to the success of the project and manuscript publication. Please feel free to contact me with any questions or concerns.

Sincerely,

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