

Promoting Educational Resiliency in Youth with Incarcerated Parents: The Impact of Parental Incarceration, School Characteristics, and Connectedness on School Outcomes

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Received: 5 March 2015 / Accepted: 29 July 2015 / Published online: 11 August 2015
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Abstract The United States has the highest incarceration rate in the world, and as a result, one of the largest populations of incarcerated parents. Growing evidence suggests that the incarceration of a parent may be associated with a number of risk factors in adolescence, including school drop out. Taking a developmental ecological approach, this study used multilevel modeling to examine the association of parental incarceration on truancy, academic achievement, and lifetime educational attainment using the National Longitudinal Survey of Adolescent Health (48.3 % female; 46 % minority status). Individual characteristics, such as school and family connectedness, and school characteristics, such as school size and mental health services, were examined to determine whether they significantly reduced the risk associated with parental incarceration. Our results revealed small but significant risks associated with parental incarceration for all outcomes, above and beyond individual and school level characteristics. Family and school connectedness were identified as potential compensatory

factors, regardless of parental incarceration history, for academic achievement and truancy. School connectedness did not reduce the risk associated with parental incarceration when examining highest level of education. This study describes the school related risks associated with parental incarceration, while revealing potential areas for school-based prevention and intervention for adolescents.

Keywords Children with incarcerated parents · School outcomes · Adolescence · Drop out · Resiliency · Multilevel modeling · School connectedness · Family connectedness

Introduction

Adolescence is a period of great potential and vulnerability within an individual's developmental trajectory. One significant marker for positive development during adolescence is completion of high school and the pursuit of a college education. Equal access to quality education is a basic human right for all youth (UNESCO 2000). However, despite national and international initiatives, there are still youth who are disproportionately denied this right, due to social and economic inequalities. One such group is youth who have experienced the incarceration of a parent (Hagan and Foster 2012). The United States has the highest incarceration rate in the world. As a result, each year about 1 in 43 children in the United States have a parent in prison, nearly half of who are between 11 and 18 years old (Maruschak et al. 2010). This poses a unique challenge to educators and school administrators, as this relatively invisible and potentially high-risk population passes through their classrooms. While there is an ongoing debate as to the unique risk that parental incarceration poses to an

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adolescent's developmental trajectory (Murray et al. 2012; Johnson and Easterling 2012; Wildeman et al. 2013), there have been few explorations into the potential benefit of individual, family, and environmental resources in achieving developmental milestones within the context of this traumatic life event.

A Developmental Ecological Perspective of Resiliency for Youth with Incarcerated Parents

The potential resilience of adolescents of incarcerated parents is best understood from a developmental ecological model (Bronfenbrenner and Ceci 1994; Dallaire et al. 2010; Poehlmann et al. 2010). This theory stresses that development is influenced by proximal interactions within immediate social contexts, such as the home and school (Bronfenbrenner and Ceci 1994). Essentially, development is influenced by any ongoing social relationships within the youth's immediate context (microsystem), as well as the systems and environments in which development occurs (mesosystem). Accordingly, to truly understand both the potential risks and resources of adolescents with incarcerated parents, this theory stresses the examination of the relationships and the social environments that contextualizes the experience.

Resiliency is the achievement of positive developmental milestones in the presence of a significant threat to an individual's development (Masten and Coatsworth 1998). This achievement is often attributed to the presence of resources within the child's ecological system, specifically, positive individual, family, and environmental characteristics that are maintained despite adversity. Resilient youth, therefore, experience both a threat and maintain some compensatory protective resources that then lead to the obtainment of important developmental milestones, such as high school graduation and pursuit of higher education. Threats to development range across the child's ecological system, from individual factors (e.g., victim of abuse), relationships (e.g., loss of a caregiver), and their immediate environment (e.g., high crime neighborhood).

Parental incarceration may be an indicator of a serious threat to adolescents' development, as these adolescents have a greater likelihood of living in an environment of accumulated risk factors (Dallaire 2007) in addition to experiencing disruptions in relationships following the emotionally distressing event of having a parent incarcerated (Murray and Farrington 2008). *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 change throughout the child's ecological system (for

reviews see Murray and Farrington 2008; Murray et al. 2012; Poehlmann et al. 2010). There are multiple theories that explain how parental incarceration may pose a threat to development by impacting the adolescent's relationships (microsystem) and their environment (mesosystem). Mechanisms that link incarceration and lifetime adjustment within the microsystem include a broken sense of attachment or loss of connection (Poehlmann et al. 2010; Murray and Murray 2010), social modeling of anti-social behavior and poor monitoring (Hagan and Dinovitzer 1999; Murray and Farrington 2008), and stigma (Murray 2007). The loss of economic and social resources (Murray 2007) impacts the youth's mesosystem. It is likely that these mechanisms are not exclusive, and that different mechanisms hold true for different children and situations (Murray et al. 2012).

All of these theories suggest that maladjustment results from a disconnection from sources of positive social support within an adolescent's environment, whether it is due to the removal of an 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 et al. 2009), and is associated with higher academic achievement. Additionally, in the absence of one source of connection, connections to other social resources can be compensatory (Witherspoon et al. 2009). As mentioned previously, the incarceration of a parent may lead to an adolescent feeling disconnected from their family, or result in them being relocated away from their neighborhood, peers, or school. Therefore, it is plausible that fostering connection to school, or other parent and family members, could compensate for this loss and prevent academic decline.

There is ongoing debate as to whether parental incarceration poses a threat to an adolescent's development. Some evidence suggests that the removal of a parent due to incarceration is actually beneficial to the child, as it results in a transition into an environment that promotes healthier development. The adolescent is removed and protected from the harmful relationship (e.g., criminally involved caregivers) and environment (e.g., dysfunctional family systems, high-crime neighborhoods), which threatens development (Eddy and Reid 2003; Hagan and Dinovitzer 1999). Alternatively, the "null hypothesis" theory of parental incarceration, in that it does not harm or benefit development, posits that the observed risks in previous studies are actually attributed to various, unaccounted for variables in the adolescent's high-risk ecosystem (see Johnson and Easterling 2012; Wildeman et al. 2013 for review). A more detailed review of the evidence that

supports the negative, positive, or null effects of parental incarceration on academic outcomes follows.

While the unique impact of incarceration on developmental has been debated, the ripple effects that incarceration has on families are well documented. Incarceration of primary caretakers leads to structural changes within the household, loss of financial support, and increased strain on family relationships (Travis and Waul 2003). As a result of incarceration, these adolescents may be separated from their parents and siblings, transition primary caregivers, neighborhoods, and schools (Travis and 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 number of stressors that result from the incarceration of a parent impacts the course of development during the tumultuous and high-risk life stage of adolescence. 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 and Poehlmann 2011). Previous studies suggest that children with incarcerated parents are at higher risk for externalizing behaviors, delinquency, and incarceration themselves (Murray and Farrington 2008; Murray et al. 2012). These children also have lower occurrences of positive life outcomes, such as high school graduation, healthy emotional adjustment, and employment (Murray and 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 and 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 and Farrington 2008; Trice and Breuster 2004) as well as in youth with any incarcerated household member (Nichols and 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). The stigma of the incarceration of a parent may affect adolescents' relationships with their peers and teachers, as well as influence academic motivation, achievement, and behaviors that further influence school completion (Shlafer and Poehlmann 2011).

Academic Outcomes of Adolescents with Incarcerated Parents

A recent meta-analysis by Murray et al. (2012) found that studies of parental incarceration and academic outcomes had varied results, highly depend on 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., cognitive ability, socioeconomic status, etc.). Additionally, some studies found that the incarceration of a mother actually improved academic outcomes immediately following the incarceration (Cho 2011). To date, the current literature has multiple methodological limitations when attempting to draw conclusions on the impact of parental incarceration on outcomes. Specifically, researchers face multiple challenges in differentiating the unique risk of parental incarceration from the various co-occurring adversities that may explain the prevalence of negative outcomes in this population (Johnson and Easterling 2012). Although the following studies are not exempt from these challenges, and do not definitely prove a unique risk of parental incarceration, they provide a description of the school related outcomes in the population.

Studies that compared small, localized samples to control groups found a higher rate of poor academic achievement, school dropout, and negative school behaviors (Trice and Breuster 2004; Murray and Farrington 2008). Trice and Breuster (2004) found a higher rate of school dropout when comparing adolescents with incarcerated mothers with their best friends (36 vs. 7 %). Murray and Farrington (2008) followed a group of boys in an industrial British city from 1953 to 2008 and found that boys who experienced paternal 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 and Farrington 2008).

Recently, a series of studies have used large, longitudinal datasets to further explore the academic outcomes of these potentially at-risk adolescents in order to better control for pre-existing or co-occurring adversities. Cho (2009a, b, 2010) used a sample of over 4000 youth whose mothers were incarcerated for 1 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, b). Cho's studies were the first to provide evidence that suggested that maternal incarceration improved children's well-being immediately following incarceration, when compared to children whose mothers were in jail for a short period of time. When comparing children with incarcerated parents, incarceration during middle childhood or early adolescence placed youth at the greatest risk to drop out of school (Cho 2010) and youth were 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 dropout 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 academic achievement and college attainment, even after controlling for a wide range of individual and school variables using the National Longitudinal Survey of Adolescent Health. Additionally, they found that the concentration of paternal incarceration in the school negatively impacted the educational attainment of all of the students within that school (Hagan and Foster 2012). It is possible that the impact of school concentration of incarcerated parents depends on the gender of the incarcerated parent (paternal vs. maternal), especially considering the larger narrative of the literature that suggests maternal incarceration has a different impact on development than paternal incarceration (Wildeman et al. 2013).

Potential Resiliency in Youth with Incarcerated Parents

While some findings suggest that children with incarcerated parents have poorer outcomes, many youth appear to be resilient to associated adversities and go on to succeed in their academic, social, and professional lives. Resiliency is often attributed to a range of individual and systematic resources within a child's socio-ecological system, which promote healthy development within stressful situations (Masten and Coatsworth 1998). While adolescents with incarcerated parents face similar threats to development, this heterogeneous group likely range in the number of protective (uniquely predictive of better outcomes in high-risk populations) and compensatory (predictive of better outcomes for both high- and low- risk populations) resources they possess. These include characteristics of the individual (e.g., temperament, self-regulation), family (e.g., warmth, connection, support), and community (e.g., presence of role models, sense of school belonging) that are maintained during and following the incarceration. For the present study, we focus on psychosocial resources that can

be promoted through prevention and intervention efforts at home and in the school to provide the most useful suggestions for clinicians and school staff.

Resources Within the Microsystem

Parent–Family Connection

A close bond with a loving, supportive, and effective caregiver is an important factor in supporting positive development, both in typically developing and high-risk youth (Masten and Coatsworth 1998). Several studies attest to the value of healthy connection, as measured by self-report of perceived closeness and frequency of contact, between children of incarcerated parents and their imprisoned parents, specifically in regard of academic success (Dallaire et al. 2010; Hagan and Foster 2012; Trice and Breuster 2004). Trice and Breuster (2004) found that adolescents who had weekly contact with their mother were four times less likely to drop out or be suspended from school. Dallaire et al. (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 and 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, during a time that parent attachment and involvement has a significant impact on school achievement (Jeynes 2005; Witherspoon et al. 2009).

Caregivers are considered the “gateway” to the adolescent's relationship to the incarcerated parents, as they determine when and how communication occurs (Poehlmann et al. 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. This strain may negatively interfere with the development of a close and trusting adolescent-caregiver relationship. An adolescent's perception of feeling close and attached to one's family and residential caregivers is protective against a host of risk-taking behaviors (Resnick et al. 1993; Resnick 2000). Additionally, strong family connection of any kind has been found to promote academic performance (Witherspoon et al. 2009). Kierkus and Baer (2002) found that a sense of connection to one's family, in that it reduced the probability of engaging in delinquent behaviors in adolescents living without one or both biological parents. Therefore, family connection may also be protective for adolescents with an incarcerated parent, as they have similar family structures.

School Connection

An adolescent's relationship with individuals in school, as well as their sense of belonging, is important to their academic achievement. School connectedness is defined as an attachment and commitment to the school and the teachers (Maddox and Prinz 2003). Lack of school connection has been linked to multiple negative life outcomes: substance use, delinquent behavior, academic outcomes, low self-esteem and risky sexual behaviors (Maddox and Prinz 2003; Catalano et al. 2004; Hawkins et al. 2005). School connectedness has also been associated with students' positive school adjustment, achievement, and overall positive psychosocial outcomes (Libbey 2004; Osterman 2000). School connection is an especially important as a protective factor, in the absence of parent and family connectedness (Witherspoon et al. 2009). Qualitative and experimental studies have found that some children with incarcerated parents feel that teachers and students view and treat them differently (Nesmith and Ruhland 2008), and that teachers actually perceive students with an incarcerated parents as less behaviorally, socially, and academically competent than their peers (Dallaire et al. 2010). This stigma can result in the children feeling disconnected and disengaging from the school environment, and missing out on its' associated positive social and academic benefits.

Resources Within the Mesosystem

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 for disadvantaged and students of lower socio-economic status. Additionally, school size was one of the few school characteristics significantly associated with a student's report of school connection in a study of a large representative sample from the National Longitudinal Survey of Adolescent Health (McNeely and Nonnemaker 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 provide greater access for distressed students to receive support and opportunities to promote a sense of school connection. School based mental health services increase the availability of clinical assistance to high risk populations, reduce stigma for receiving mental health services, and increase opportunities

for mental health promotion and prevention (Paternite 2005). Murray and 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 and Hoagwood 2000), although what research does exist suggests that school-based mental health services may be more beneficial than community services (Weiss et al. 1999). In the present study, we examine the potentially compensatory value of student reports 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 Parental Involvement

Schools that have the greatest "holding power" have opportunities for meaningful involvement for both students and their parents (Christenson and Thurlow 2004). Parental involvement in schools is significantly associated with students' academic achievement, regardless of their gender or ethnicity (Jeynes 2005). Multiple meta-analyses have confirmed this relationship in general and high-risk student populations (Fan and Chen 2001; Jeynes 2005). Caregivers of adolescents with incarcerated parents may likely be under significant strain, be suspicious of public institutions, or have had negative school experiences during their education. All of these barriers make it essential that schools have a culture that promotes parental involvement and values the home-school connection. Without this culture, it is unlikely that caregivers will receive the support and communication they need from school staff to be informed and become involved in their adolescent's education.

Summary of Reviewed Literature

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, 2011; Hagan and Foster 2012; Murray and Farrington 2008; Sack et al. 1976; Stanton 1980; Trice and Breuster 2004), a recent meta-analysis by Murray et al. (2012) suggests that many studies were not statistically rigorous enough to provide valid conclusions. Additionally, parental incarceration may have less pernicious effects on educational outcomes than the incarceration of other more remotely related household members (Nichols and Loper 2012). Qualitative studies reveal that

children feel isolated at school, and that peers and teachers treat them differently (Nesmith and Ruhland 2008). Incarceration in the family may affect adolescents' relationships with peers and teachers, as well as influence their academic motivation, achievement, and behaviors (Shlafer and Poehlmann 2011). Based on this literature, schools appear to be just another arena for youth to experience failure and isolation. However, it is possible for schools to be a crucial safety net for these youth, as schools are the only institution that these children are guaranteed to pass through. There are multiple school characteristics that may protect or compensate for risks, such as school size or mental health supports.

Current Study

This study attempts to gain a better understanding of how the incarceration of a parent influences youth's school experience, and what factors may compensate for this potential risk. Although considerable research has examined risk factors and associated outcomes within this population, there is little research to date on the protective and compensatory factors that promote healthy adjustment for youth coping with the incarceration of a parent. In order to offer service providers with guidance on informed interventions for this population, we must identify individual, family, and school resources 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) explore the presence (positive, negative, null) of the relationship between parental incarceration and school outcomes when controlling for school environment; and to (2) investigate potential protective and compensatory factors on both individual and school levels.

Our study had two primary objectives. The first was to examine the association between parental incarceration and adolescent's problem school behavior (Truancy), academic achievement (Cumulative Grade Point Average), and educational attainment (Highest Level of Education) in a large nationally representative dataset (Add Health). Based on previous literature (Hagan and Foster 2012, Murray et al. 2012), we predict that there will be a significant negative relationship between a history of parental incarceration and academic achievement as well as educational attainment, even when controlling for various individual and school level factors. However, we predict that the effect size of parental incarceration will be small, and suggestive of little to no effect of parental incarceration once controlling for various co-existing adversities. We predict that parental incarceration and truancy will have a relatively larger and positive relationship, based on

literature suggesting a stronger relationship between parental incarceration and delinquency (Murray et al. 2012). The second objective of our study was to determine whether individual and school level factors could moderate the relationship between a history of parental incarceration and the three school outcomes, and to determine if individual characteristics (school connectedness and family connectedness) were protective (unique effects on youth with parental incarceration history) or compensatory (similar effects on youth with and without parental incarceration history). We hypothesized that family connectedness, school connectedness, and counseling would be positively associated with cumulative academic achievement and educational attainment, and negatively associated with truancy. The addition of these individual resources would reduce the magnitude of the association between parental incarceration and the outcomes. We also hypothesized that the association between a history of parental incarceration and school outcomes would vary between schools, similar to the effects reported in previous studies using AddHealth data (e.g., Hagan and Foster 2012). We predict that, consistent with educational research, this variance will be partially explained by school size (Leithwood and Jantzi 2009) and opportunities for parental involvement, as indicated by the presence of a parent–teacher association (Jeynes 2005). As there is no research to date on the impact of onsite mental health counseling on academic achievement, our prediction that mental health counseling will be negatively associated with truancy and positively associated with achievement and educational attainment is based solely on previous theory (Rones and Hoagwood 2000). Finally, we hypothesized that individual reports of family connectedness and school connectedness would compensate, but not uniquely protect, within the parental incarceration sample in that they would reduce the magnitude of the relationship between parental incarceration and the outcomes (Truancy, Academic Achievement, Highest Level of Education). Previous literature supports that connection to family and school promotes academic achievement and reduces the risk of delinquency in both typically developing and high-risk youth (Libbey 2004; Masten and Coatsworth 1998; Osterman 2000).

Method

Participants

Participants were drawn from the In Home Survey of the Add Health dataset, a nationally representative study of seventh to twelfth 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 2009; 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 who participated in 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 Academic Achievement). The sample size varied depending on the source of the outcomes variables (Truancy Weighted N = 71,447; Highest Level of Education Weighted N = 69,082; Cumulative Academic Achievement Weighted N = 46,045).

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 in analyses. About 12 % (weighted n = 9063) 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 years old at Wave 1. See Table 1 for a complete 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.

Potentially Compensatory 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 public assistance status (“Receiving public assistance such as welfare” yes/no), were obtained from the Wave I In-Home survey. Additionally, a measure of parent’s highest level of education was created 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 of 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, a measure of parent–family connectedness was used from 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.

Table 1 Weighted participant and school descriptive statistics

Variable	Mean (SE)	Percentage (weighted N)
<i>Individual characteristics</i>		
Age (Wave1)	15.9 (.03)	
Average family connectedness	4.19 (.01)	
Average school connectedness	3.77 (.01)	
Transcript 4-year grade point average (academic achievement)	2.57 (.02)	
Total days skipped school (Truancy)	2.60 (.15)	
Highest level of education (HLE)	6.02 (.04) ^a	
Wave 1 grade point average	2.77 (.01)	
Sex (male)		51.7 % (35,853)
Federal aid status		10.3 % (7577)
Minority status		46.0 % (33,247)
Highest level of parent education: didn't go to school		0.3 % (154)
Eighth grade or less		0.6 % (3431)
>8th grade/didn't graduate high school (HS)		10.9 % (6732)
Vocational instead of HS degree		0.5 % (239)
High school graduate		32.1 % (14,718)
GED		3.8 % (3762)
Business/trade/vocational school post HS		6.6 % (4941)
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 % (9792)
Receive counseling (yes)		13.5 % (8701)
Parental incarceration (yes)		12.1 % (9063)
<i>School characteristics</i>		
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		61.8 % (49,701)
Offsite/in district mental health counseling		2.1 % (120)
Referral to community		33.5 % (19,041)
Nothing		4.5 % (2586)
School size: small (1–400)		6.2 % (3459)
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 % (4959)
Type of school (public)		95.3 % (68,959)

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 Academic Achieve Weighted N = 46,045

^a Highest level of education is an ordinal category. 6 represents attending but not graduating from college

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 to 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 and Cross 2010).

Counseling Participants reported during Wave 1 whether they received counseling in any setting (school, community, hospital.) during the previous year on a dichotomous variable (yes/no).

Academic Outcome Variables

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

Cumulative Academic Achievement Cumulative academic achievement was estimated using the individual's average grade point average during high school. Grade point averages are measured on a single four-point scale and were collected from the AHAA component from the Add Health Study. This single variable was based on the students' 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 physical education.

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

Plan of Analyses

Weighted hierarchical multilevel modeling (Radenbusch and Bryk 2002) were used to estimate predictors of individual and school level variation in educational outcomes (Truancy, Cumulative Academic Achievement, and Highest Level of Education). As recommended by the Carolina Population Center (Chantala 2006), multilevel modeling was based upon the *xmixed* 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 (Radenbusch and Bryk 2002). Categorical variables were transformed into dummy coded variables (urbanicity and school mental health services).

Preliminary Analyses Plan

A series of unconditional multilevel models were run to observe whether the outcomes of interest (Truancy, Cumulative Academic Achievement, and Highest Level of Education) varied sufficiently between schools to justify the use of multilevel modeling (see Eq. 1). In these models, there was one random intercept in the level one model. Multilevel modeling was considered as justified if the intraclass correlation coefficient was above 0.05, or if the design effect was above 2.0 (Peugh 2010; Radenbusch and Bryk 2002).

$$Y_{ij} = \gamma_{00} + u_{0j} + r_{ij}. \quad (1)$$

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 $N(0, \tau_{00})$; r_{ij} = student i 's random error which also varies independently $N(0, \sigma^2)$; $i = 1, \dots, n_j$ students; and $j = 1, \dots, 132$ schools.

Weighted Multilevel Linear Models

A series of five models were run 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. This pattern of analysis allowed us to examine changes afforded by each of the variables added, and is an indicator of the model's global effect size. The final full model describes the simultaneous interplay of all variables (See Eq. 2 for full model). For all models, statistical significance was indicated by a p value of 0.05 or lower.

We reported effect sizes following generally accepted guidelines of multilevel effect size reporting (Peugh 2010, Radenbusch and Bryk 2002). Global effect sizes (variance explained by all of the variables in the model) were estimated by the pseudo R^2 statistic. Local effect sizes (variance explained by a single variable in the model) were estimated with the proportion reduction in variance statistic (PRV). This statistic is the percentage of variance in the

model that is reduced by adding the variable of interest. It is calculated by dividing the difference between model variances with and without the variable of interest by the model variance without the variable of interest. It is important to note that these statistics are not comparable to indicators of effect size that are found in ANOVA or multiple regression analyses (e.g., Cohen’s d , R^2 , Odds ratio).

Model 1: Is Parental Incarceration Associated with School Outcomes? Our first model tested whether 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_{1j} , β_{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 .

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 (β_{3j}) to level 1 of the previous model to test whether they predicted individual outcomes.

Models 3 and 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, $\beta_{1j} = \gamma_{10} + u_{1j}$), and seven fixed coefficients (β_{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 next added school level covariates (urbanicity, sector, % student body passing at grade level) (γ_{01}) and compensatory factors (school size, presence of parent–teacher association, 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.

Model 5: Are School Connectedness, Family–Parent Connectedness, and Counseling Protective or

Compensatory Factors for 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 individual resources (school connectedness, family–parent connect- edness, counseling) as observed in previous models, and our study outcomes.

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

Note: where Y_{ij} = individual i in school j ’s outcome score; β_{0j} = school j ’s intercept; β_{1j} , β_{2j} , β_{3j} , β_{4j} = fixed effects of parental incarceration (β_{1j}), covariates (β_{2j}), compensatory 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 $N(0, \sigma^2)$, γ_{00} = average of mean outcomes across schools; γ_{10} , γ_{20} , γ_{30} , γ_{40} = mean slope for parental incarceration, covariates, compensatory factors, and interaction across schools; γ_{01} , γ_{02} = effect of school covariates and compensatory 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 and design effects from the unconditional models for cumulative academic achievement (ICC = 0.44) and highest level of education (ICC = 0.20) were within recommended limits. Although the intraclass correlation statistic 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 Models

Truancy

The parental incarceration and individual covariates in Model 1 explained 1.1 % of variance in the model (Wald $\chi^2(5) = 53.28$, $p < .001$, 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 compensatory factors (school connectedness, parent–family connectedness, and counseling) in Model 2 explained another 1.8 % of the individual variance in truancy (Wald $\chi^2(8) = 92.12$, $p < .001$, pseudo- $R^2 \Delta = 0.018$) 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 $\chi^2(8) = 87.37$, $p < .001$, pseudo- $R^2 \Delta = 0.01$); 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 $\chi^2(18) = 177.43$, $p < .001$, pseudo- $R^2 \Delta = 0.0005$). School efficacy ($b = .007$, $z = 2.45$, $p = .01$), school size ($b = .68$, $z = 5.09$, $p < .001$), and having no mental health 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 $\chi^2(11) = 127.47$, $p < .001$, 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 Academic Achievement

The parental incarceration and control variables explained 2.4 % of the variance in cumulative academic achievement (Wald $\chi^2(5) = 124.86$, $p < .001$, pseudo- $R^2 = 0.024$). Parental incarceration ($b = -0.35$, $z = -4.31$, $p < .001$)

was negatively associated with academic achievement, 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 positively associated with higher academic achievement, while being of minority status was negatively associated with academic achievement ($b = -0.16$, $z = -2.50$, $p = .01$). The addition of compensatory factors (school connectedness, parent–family connectedness, and counseling) in Model 2 explained another 0.7 % of the variance in academic achievement (Wald $\chi^2(8) = 199.21$, $p < .001$, pseudo- $R^2 \Delta = 0.007$), with above average reports of parent–family connectedness ($b = 0.09$, $z = 2.04$, $p = .04$), and above average reports of school connectedness ($b = 0.13$, $z = 3.55$, $p < .001$) predicting higher achievement. Self-report of receiving mental health counseling was negatively associated with the overall academic achievement ($b = -0.31$, $z = -3.54$, $p < .001$). Parental incarceration remained significant, and its association with academic achievement was only slightly reduced by the addition of the compensatory 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 academic achievement, suggesting that the relationship (or slope) between parental incarceration and academic achievement significantly varied between schools from -0.07 to -0.56 (Wald $\chi^2(8) = 182.09$, $p < .001$, pseudo-likelihood Ratio $\chi^2(2)$ test = 972.90, $p < .001$, pseudo $R^2 \Delta = 0.001$, $u_{1j} = -0.24$). The addition of the school level variables explained a minimal amount of additional variance in Model 4 (Wald $\chi^2(18) = 267.52$, $p < .001$, 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 positively associated with academic achievement. 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 $\chi^2(9) = 335.38$, $p < .001$, pseudo- $R^2 = .0312$). Parental incarceration remained significant in the final model ($b = -0.32$, $z = -3.88$, $p < .001$), and explained 0.4 % of the variance in the model (PRV = 0.004). See Table 2 for details.

Highest Level of Education

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

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)

Regression coefficients (fixed effects)	Truancy <i>b</i> (SE)	GPA <i>b</i> (SE)	HLE <i>b</i> (SE)
<i>Independent variable</i>			
Parent incarceration	0.45 (.18)**	−0.32 (.08)***	−0.61 (.10)***
<i>Individual covariates</i>			
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 assistance	0.51 (.13)***	–	–
<i>Individual protective factors</i>			
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)**	–
<i>School covariates</i>			
% Passing at grade level	.006 (.003) ^t	–	–
Type	–	.70 (.64)*	–
<i>School protective factors</i>			
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	–	–
<i>Interactions</i>			
School connectedness × parental incarceration	–	–	−0.31 (.08)***
<i>Intercept</i>			
	.30 (.32)	0.52	4.92***
<i>Variance components (random effects)</i>			
	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	0.82 (.64–1.1)*	1.77 (1.0–2.9)*	–
Correlation of the intercept and PI slope (parent slope × intercept)	0.16 (−.36–.05)	.19 (−.90–.95)	–
<i>Model summary statistics</i>			
Wald Chi Square statistic	127.47***	335.38***	604.18***
Number of estimated parameters	11	9	7

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; federal assistance = receiving public assistance such as welfare (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)

^t $p \leq .08$ * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

($b = 0.75, z = 9.85, p < .001$) and having a parent with a college degree or higher ($b = 0.38, z = 18.36, p < .001$) was associated with a higher level of education, and all together these three variables explained 9.4 % of the variance in highest level of education (Wald $\chi^2(5) = 524.43, p < .001, \text{pseudo-}R^2 = 0.094$). In Model

2, above average school connectedness was positively correlated to highest level of education ($b = 0.33, z = 7.86, p < .001$), while counseling was negatively correlated with highest level of education ($b = -0.45, z = -3.64, p < .001$). The model accounted for another 1.3 % of variance in highest level of education (Wald

$\chi^2(8) = 815.11, p < .001$, pseudo- $R^2 \Delta = 0.013$). 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 χ^2 test = 1.84, $p = 0.09$). In Model 4, the presence of a school parent–teacher organization was positively associated with highest level of education ($b = 0.37, z = 2.04, p = 0.04$), and explained 0.3 % of the variance in the model (Wald $\chi^2(18) = 1086.96, p < .001$, pseudo- $R^2 \Delta = 0.034$). 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 an individual's highest level of education ($b = -0.28, z = -3.38, p = .001$). The addition of the interaction accounted for an additional 0.09 % variance (Wald $\chi^2(19) = 1175.48, p < .001$, pseudo- $R^2 \Delta = 0.0009$). 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 $\chi^2(7) = 604.18, p < .001$, 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

Increasing attention has focused on the impact of parental incarceration on youth's development within the context of the United States' longstanding position of having the highest incarceration rate in the world. This study attempted to gain a better understanding of the resiliency of adolescents with incarcerated parents through a developmental ecological lens (Bronfenbrenner and Ceci 1994; Dallaire et al. 2010; Poehlmann et al. 2010). We examined the crucial developmental milestone of obtaining an education, as it is an essential turning point in determining long-term life outcomes (NCES 2010) as well as an identified goal for national and international children's rights. Resiliency is defined as positive outcomes in the presence of adversity of serious threats to development (Masten and Coatsworth 1998). Researchers continue to debate whether parental incarceration has a positive, negative, or no effect on development above and beyond the well documented pre- and co-existing adversities in this population (Johnson and Easterling 2012; Wildeman et al. 2013).

We attempted to understand the resilience of adolescents with a history of parental incarceration by first determining

whether parental incarceration was truly a threat to academic milestones, above and beyond individual and school level adversities, while also identifying individual and school level resources that uniquely promoted healthy adaptation in youth with incarcerated parents. While there are multiple mechanisms associated with incarceration related risk, this study focus specifically on an adolescent's sense of connection to school and parents/family. When a parent is incarcerated, the adolescent's 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 et al. 2009). School connectedness is associated with increased school motivation, achievement, and preventing delinquent behavior (Catalano et al. 2004; Hawkins et al. 2005; Maddox and Prinz 2003.). 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 found that parental incarceration was significantly associated with all three outcomes, while controlling for demographics (socioeconomic status, 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 = 3 %; Cumulative Academic Achievement Percent Reduced Variance = 0.4 %; Highest Level of Education Percent Reduced Variance = 0.4 %) in the final model. Consistent with our hypotheses, truancy continued to have the strongest association with parental incarceration, while the observed association with cumulative academic achievement and highest attained level of education was explained by pre- and co-existing individual and school level characteristics. Across the three outcomes, receiving counseling was an indicator of increased risk for poor academic outcomes, while school connectedness was compensatory for cumulative academic achievement and highest level of education, and parent/family connectedness was a compensatory factor for truancy and cumulative academic achievement. Small school size and having onsite mental health services reduced truancy, while being referred for mental health services was positively associated with cumulative academic achievement. Surprisingly, having a parent in prison reduced the positive relationship between school connectedness and lifetime educational attainment.

Parental Incarceration as an Indicator of Academic Risk

Our study provided a richer explanation of the previously documented association of parental incarceration with poor school outcomes using a nationally representative sample. Using weighted multilevel modeling, we found that the association between parental incarceration and truancy, academic achievement, and highest level of education was primarily explained by pre- and co-existing adversities also associated with school failure and parental incarceration (poverty, minority status, parental education). Additionally, an individual's report of school connectedness, family connectedness, attending counseling, and a number of school characteristics further explained the majority of variance previously attributed to parental incarceration. The remaining small, but unique, risk associated with having a parent incarcerated during childhood is not explained by co-existing contextual adversities (poverty, minority status, low parent education), 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). However, it is important to note that the association was small across all three outcomes, and could be attributed to unaccounted for variables of risk. While we cannot suggest parental incarceration causes negative school outcomes, our findings suggest that the history of parental incarceration is an indicator for decreased educational engagement (truancy) and decreased academic success (academic achievement and highest level of education), and that it identifies a population of students who have experienced a myriad of cumulative threats to their development.

We observed a significant, negative 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. As opposed to a protective factor, in which a resource uniquely protects success, we found that a parental incarceration history negates the promotive relationship between school connectedness and pursuit of education. While school connectedness appears to be a resource 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 already 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. No significant interactions were observed while predicting truancy or cumulative academic achievement. This suggests that the individual and school characteristics promote (or prevent) success equally across individuals with and without a parental incarceration history.

Individual Resources as Compensatory Factors

This study identified a number of individual and school characteristics that were associated with better academic outcomes. In general, the benefit afforded by these characteristics seemed to operate for children of incarcerated parents in much the same way as for other youth, making them "compensatory" factors instead of unique "protective" factors (Masten and Coatsworth 1998). These findings indicate that home and school connectedness do matter for children of incarcerated parents with regard to truancy and academic achievement. 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.

During adolescence, feeling close to one's parent and family has a significant impact on school achievement (Jeynes 2005; Witherspoon et al. 2009) and delinquency (Resnick et al. 1993). This was reflected in our analyses, in that as parent–family connectedness increased, rates of truancy decreased and academic achievement 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 levels of academic achievement than 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 academic achievement (See Table 2). This suggests that 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 promoted greater academic achievement and higher levels of attained education in the general population. In youth with a history of parental incarceration, school connectedness was only protective with regard to their cumulative academic achievement.

With regard to academic achievement, 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 regard 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 Fig. 1). 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 increases the likelihood of higher levels of academic achievement, which increases the likelihood of 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 public assistance, such as welfare, 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, parents' 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 and 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.

Contrary to hypotheses, youth reports of receiving counseling were positively associated with truancy and negatively associated with cumulative academic achievement and highest level of education attained. 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 school-level indicator may better measure the benefits of counseling in 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 Resources as Compensatory Factors

The 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 that 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 and Jantzi 2009). In regard to mental health services, schools that either provided counseling or referred youth to community resources performed better on all outcomes than 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, onsite mental health

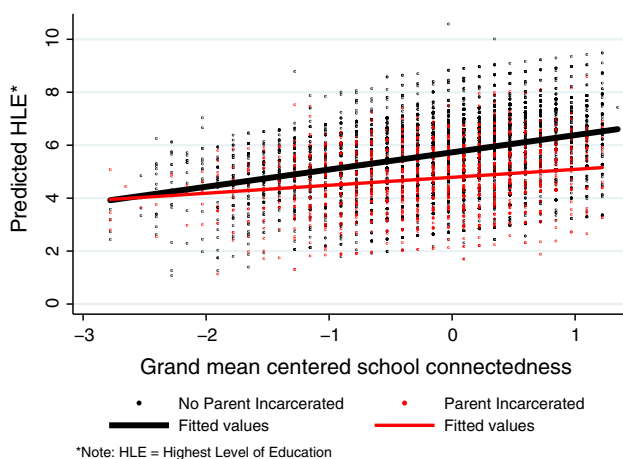


Fig. 1 Interaction effect of parental incarceration and school connectedness on highest level of education (HLE)

counseling is especially important for youth with incarcerated parents, as they many need more adult monitoring and accountability than their peers. Families 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 caregivers' knowledge, or in the case of extreme economic hardship, skip school with the caregivers' 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 academic achievement, though the effect was dependent upon the setting of the referred counseling services. Schools that referred youth to the community for mental health services, compared to providing onsite mental health services, had higher cumulative academic achievement. 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 student's sense of shame or stigma with peers. Community referrals may also be more effective, as students may have access to a wider range of 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 adolescents' 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 parental 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-reported 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. Similarly, many of the variables selected were not ideal representations of the resources discussed. For example, though a parent–teacher association may foster parental involvement in school, a continuous measure of parent participation in the parent–teacher association would have been a more salient representation of the concept.

Most importantly, we cannot assume causality between parental incarceration and school outcomes. As already mentioned, parental incarceration was self report, and therefore a longitudinal model could not be established. Additionally, 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 achievement and parental incarceration, we cannot assume that parental incarceration causes a decline in the participants' academic trajectory. Additionally, all of our findings had very small effect sizes. Those significant effects could be attributed to unaccounted for variables, or simply “placebo” effects of using a large dataset. As we did not use a “placebo” design, we cannot rule out the possibility that the observed significance was due to the size of the dataset or the small number of individuals in the “parental incarceration” group.

Our study was also limited by the nature of the analyses. As weighted multilevel modeling calls for a more parsimonious model than regression analyses, we had to condense certain control variables that otherwise should have been continuous [e.g., federal assistance (y/n) instead of income status] or categorical [e.g., minority status (y/n) vs. ethnicity]. For the same reason, we were unable to control for all potential confounding variables, and therefore selected those most theoretically relevant to our study.

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 levels of academic achievement or those who did not complete high school may have been less motivated to allow their transcript information be included in the study, potentially excluding the highest risk individuals.

Conclusion

This study makes three new contributions to the research. First, it confirms the presence of a unique association between parental incarceration and truancy, while controlling for both school characteristics and adolescent's sense of connectedness. While parental incarceration was significantly negatively associated with cumulative academic achievement and an individual's lifetime educational attainment, the effect size was small and does not support a robust negative association between parental incarceration and positive school outcomes. Instead, we support for the "null" hypothesis of parental incarceration, which suggests parental incarceration is an indicator of the presence of multiple adversities within the adolescents' environment, which better account for the observed risks. Additionally, we uniquely added to the literature by identifying school and family connectedness as an important predictor of outcomes that partially explains the observed variance previously attributed to parental incarceration. This suggests that an adolescent's sense of connectedness may be impacted by the incarceration of a parent, which then influences truancy, academic achievement, and lifetime education attainment.

Second, our study identified individual and school resources that promoted school success in a nationally representative sample. 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. The 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 parents 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 when accounting for numerous pre- and co-occurring 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.

Finally, we added to the current literature by revealing that, while it serves as a positive predictor of later educational attainment for other students, feeling closely attached to school has no discernable effect for children of incarcerated parents. This finding should cause concern and call researchers, policy-makers, and educators to action. 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, placement test 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 pursuing post-secondary education. While a school counselor traditionally plays this role, an invested teacher, administrator, or even community member could provide this guidance.

Future research needs to continue to explore characteristics of schools, communities, and individuals that help students with incarcerated parents achieve academic success. Next steps include implementing evidence-based universal interventions targeted at increasing school and family connectedness in schools with high concentrations of youth with incarcerated parents, to determine if enhancing a student's connectedness promotes school success. Additionally, there are many adolescents who struggle to graduate high school or pursue higher education due to similarly invisible indicators of cumulative risk or

disconnection, such as children of illegal immigrants, transient or homeless children, or children with other forms of complex developmental trauma. It is likely that fostering a sense of connection to family and parents, while being aware of the presence cumulative adversities within the child's environment, will similarly be important in fostering resiliency in these adolescents who have difficulty accessing education due to socioeconomic adversities. This line of research will hopefully shed more light onto the pathway from risk to resilience for youth with incarcerated household members, and other socioeconomic adversities, within and beyond the classroom. By better understanding what prevents and promotes access to education, educators, clinicians, and policy makers will hopefully be able to better identify and implement targeted programs to ensure equal access to the universal right to an education in the future.

Acknowledgments This research uses data from Add Health, a program project directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill, and funded by Grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Information on how to obtain the Add Health data files is available on the Add Health website (<http://www.cpc.unc.edu/addhealth>). This research uses data from the AHAA study, which was funded by a Grant (R01 HD040428-02, Chandra Muller, PI) from the National Institute of Child Health and Human Development, and a Grant (REC-0126167, Chandra Muller, PI, and Pedro Reyes, Co-PI) from the National Science Foundation. This research was also supported by Grant, 5 R24 HD042849, Population Research Center, awarded to the Population Research Center at The University of Texas at Austin by the Eunice Kennedy Shriver National Institute of Health and Child Development. Opinions reflect those of the authors and do not necessarily reflect those of the granting agencies. No direct support was received from Grant P01-HD31921 or Grant R01 HD040428-02 for this analysis.

Author Contributions Emily B. Nichols conceived of the study, participated in its design, conducted statistical analysis and data interpretation, and drafted the manuscript; Ann B. Loper participated in the study design, interpretation of the data, and editing of the manuscript; J. Patrick Meyer participated in the design of the study, consulted on the statistical analysis, and interpretation of the data. All authors read and approved the final manuscript.

Compliance with Ethical Standards

Conflict of interest The authors report no conflict of interests.

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