Mental Health Correlates of Children with Currently and Formerly Incarcerated Parents

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Karen Laurel Davis

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Abigail H. Gewirtz

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Abstract

Reliable information about the families and children of incarcerated people is difficult to obtain; for this reason, major gaps exist in our understanding of the parent-child relationships and the health and well-being of children with incarcerated parents. This study examined indicators of mental health in young people using data from a statewide survey. The study aimed to determine whether children of incarcerated parents report higher levels of mental health problems than children without an incarcerated parent. I compared children with a currently incarcerated parent to children with a formerly incarcerated parent and children with no history of parental incarceration on seven indicators of mental health. I also examined whether strong parent-child relationships were protective against mental health concerns in children with incarcerated parents. Results indicate that children of currently and formerly incarcerated parents are at elevated risk for mental health problems. Furthermore, strong parent-child relationships partially buffered children from the risk for poor mental health associated with parental incarceration.

Keywords: parental incarceration, mental health, parent-child closeness

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Between 1980 and 2000, the rate of adult imprisonment in the United States more than tripled (West & Sabol, 2008). On any given day, there are about 1.9 million children in the United States who have a parent in a state or federal prison (Glaze & Maruschak, 2008) and millions more have a parent incarcerated in a county jail. As the number of individuals under correctional custody who are parents of minor children increases, so does the need to understand the wide-ranging impacts on the families of incarcerated people.

Incarceration of a parent is a stressful event for families and children (Bocknek, Sanderson, & Britner, 2008; Kampfner, 1995; Nesmith & Ruhland, 2008). Children of incarcerated parents often experience multiple emotional and social difficulties, including exposure to the parent's criminal activity, witnessing the parent's arrest and court proceedings, separation from parents, loss of family income, housing instability, changes in caregiving, stressful visits with the incarcerated parent, and shame or stigma associated with a parent's involvement in the criminal justice system (Murray, Farrington, & Sekol, 2012). One potential impact of parental incarceration and the stressors associated with it is compromised emotional well-being of children.

Children and adolescents with incarcerated parents are thought to be at elevated risk for mental health problems, though research has produced mixed results. A recent meta-analysis by Murray, Farrington, and Sekol (2012) concluded that children of incarcerated parents are no more likely than comparison groups to exhibit poor mental health outcomes. However, many high-quality studies have independently produced contradictory findings. For example, a study in England found that children of incarcerated parents were more than twice as likely as children in the general population to experience significant mental health problems (Murray & Farrington, 2008b). A similar study from the United States (R. Johnson, 2009) compared children who had experienced parental incarceration with a non-incarcerated control group and found that after controlling for confounders such as parent education, parent age, and neighborhood quality, children of incarcerated parents were 4.7 times more likely than children of matched controls to exhibit internalizing problems when they were 11 to 16 years old. Because there is considerable variability in developmental trajectories for these children, research on risk and protective factors

can shed light on the processes of resilience that have the potential to contribute to positive functioning in children of incarcerated parents.

Mental health problems in childhood have important implications for development across the lifespan. Previous research suggests that adults who experience the onset of depression in childhood or adolescence have more impaired social and occupational functioning and poorer quality of life than those whose depression first begins in adulthood (Zisook et al., 2007). Furthermore, childhood mental health concerns might contribute to worse outcomes across a variety of domains (Cox, Mills-Koonce, Propper, & Gariepy, 2010) such as low educational attainment, poor occupational functioning, and early childbearing (Rao, 2006). Deleterious effects of parental incarceration on the mental health of offspring are likely to persist throughout the life course (Colman, Wadsworth, Croudace, & Jones, 2007; Fergusson & Woodward, 2002). For example, Murray and Farrington (2008) found that men who had experienced parental incarceration during their childhood were significantly more likely to have high levels of anxiety and depression at age 48 than those in a comparison group.

Adolescence is characterized by significant changes in social, emotional, and cognitive capacities, and it is a particularly sensitive period for mental health concerns, with emotional problems often onsetting during these years. The prevalence of emotional and behavioral disorders in children has been estimated at 13% in childhood (Merikangas, He, Brody, et al., 2010) and over 30% by adolescence, including 22.2% with a disorder of severe impairment (Merikangas, He, Burstein, et al., 2010). Mental health problems in adolescence are a particularly salient issue for children of incarcerated parents because mental health problems might contribute to adolescents' problem behavior and intergenerational patterns of low achievement, criminality, and poverty (Farrington, Jolliffe, Loeber, Stouthamer-Loeber, & Kalb, 2001). About one-third of children with a parent in state or federal prison will reach their eighteenth birthday while their parent is still incarcerated (Glaze & Maruschak, 2008).

Adolescence is a time when parent-child relationships change and often become strained (B. Allison & Schultz, 2004; Collins & Steinberg, 2008). This can be particularly true for adolescents with incarcerated parents, because adolescents have greater ability to understand

the circumstances of a parent's incarceration than younger children (Shlafer & Poehlmann, 2010). Although strong parent-child relationships have been investigated as a protective factor for younger children of incarcerated parents (Mackintosh, Myers, & Kennon, 2006; Poehlmann, 2005b), there are no studies in the published literature examining how the quality of parent-child relationships in adolescence might buffer children of incarcerated parents from negative mental health outcomes. This study addresses this gap in the literature by examining the associations between parent-child relationships and mental health indicators in adolescents with currently and formerly incarcerated parents.

Theoretical Framework

This study is grounded in a risk and resilience framework. Resilience refers to the maintenance or development of positive functioning in the face of exposure to significant stress or adversity (Masten, Best, & Garmezy, 1991). Masten (2001) argued resilience is common and is the result of normative adaptational systems of humans. Developmental scientists are particularly interested in elucidating processes that contribute to resilience in childhood and adolescence because early deviations from normative developmental trajectories can have cascading effects on later developmental processes (Masten & Cicchetti, 2010).

The study of resilience often focuses on identification of risk and protective factors. Risk and protective factors can be qualities of a child, or qualities of the child's environmental context (Masten & Obradović, 2006). Important risk factors for children that are relevant to this study include parental incarceration, family instability, and poverty.

People who are incarcerated are likely to have experienced considerable adverse life events prior to becoming involved in the criminal justice system, and this is true for those who are parents of minor children. Parents in prison are more likely than non-incarcerated people to have mental health diagnoses, substance abuse problems and histories of family violence (Glaze & Maruschak, 2008; Jordan et al., 2002). These risk factors for adult incarceration also put the children of incarcerated parents at greater risk for poor outcomes. Poehlmann (2005) found that 88% of children with currently incarcerated mothers experienced at least four family risk factors (i.e., low educational attainment, receipt of public assistance, caregivers with more than four

dependents, prenatal substance exposure). However, families with an incarcerated parent demonstrate considerable heterogeneity in their exposure to contextual risk prior to incarceration. In another study of children with a history of maternal incarceration, Phillips and colleagues (Phillips, Erkanli, Costello, & Angold, 2008) found that about half of the youth experienced minimal risk factors. Therefore, while all children of incarcerated parents share the experience of incarceration, the lives of these families are quite diverse in other ways, with some, but not all, embedded in a context of many adverse circumstances.

Many families with an incarcerated parent are known to have significant problems beyond criminal involvement that may include a history of child abuse or neglect, parental substance abuse or mental health problems, lack of education and opportunity, poverty, or the experience of racism (Phillips et al., 2008). Incarceration can serve to exacerbate these problems and can also result in additional strains for families and children such as loss of family income, disrupted attachment with caregivers, poor parenting skills, social stigma, and inadequate supervision of children. The stress associated with having an incarcerated family member can cause declines in personal well-being and impaired parenting skills in caregivers. These corollaries of parental incarceration represent significant threats to the optimal development of the children of incarcerated parents (Phillips, 2010).

Despite the prevalence of multiple risk factors, families with incarcerated parents can also display considerable resilience across varying domains. Strong family relationships have been identified as a critical mechanism for facilitating resilience in the face of environmental risks (Miller, 2007). One of the primary mechanisms of resilience for children is positive relationships with parents and other caregivers, which foster protective psychological processes; children who experience chronic adversity fare better when they have a good and stable relationships with a competent adult (Masten et al., 1991). In the current study, parental closeness is hypothesized as a protective factor for children's mental health. Some families maintain strong parent-child relationships despite the experience of parental incarceration. Examining the variation in both risk factors and outcomes for children of incarcerated parents is a crucial area of inquiry because it may help identify mechanisms of resilience.

The incarceration of a parent is often a stressful event for families. In addition to concern about the well-being of the incarcerated person, parents remaining at home may face a multitude of challenges such as reduced income, residential instability, increased demands related to advocating for the imprisoned parent, and shame or stigma associated with incarceration, all of which can increase stress for parents and negatively impact parent-child relationships. Although there is reason to believe they are important, there is currently no evidence regarding whether strong parent-child relationships protect against mental health problems among adolescents with currently or formerly incarcerated parents.

This study aims to investigate the relationships between several risk and protective factors and mental health functioning in children with both currently and formerly incarcerated parents. Relevant risk factors are race, poverty, and family structure. Parent-child closeness is examined as a protective factor. Each of these risk and protective factors are reviewed below.

Poverty. Poverty is a particularly salient issue for families of incarcerated people. Research demonstrates that people who are poor are more likely to become involved in the criminal justice system (Wakefield & Uggen, 2010; Wheelock & Uggen, 2006). Incarceration can also worsen or prolong existing financial problems, and these effects persist beyond the incarceration term. More than half of incarcerated parents report they provided primary financial support for their minor children in the month prior to being arrested (Glaze & Maruschak, 2008). When parents are incarcerated, family incomes decline, regardless of whether the parent who is incarcerated was a custodial parent or not at the time of arrest. Kjellstrand and Eddy (2011) found that parents in families with a history of parental incarceration worked fewer hours, had less household income, received more financial assistance, and had lower overall SES than families with no history of parental incarceration. Because low family income has been shown to be associated with poor mental health in adolescence (Emerson, Graham, & Hatton, 2006) it is important to consider the effects of exposure to poverty as a potential avenue through which parental incarceration exerts effects on children's mental health.

Racial and ethnic disparities. The racial and ethnic disparities that exist in the criminal justice system are well-documented (Carson, 2014). The considerably higher incidence of

incarceration in communities of color means that there are also racial disparities among the children of incarcerated parents. In 2007, Black children were almost eight times more likely and Hispanic children were almost three times more likely than White children to have a parent in prison (Maruschak, Glaze, & Mumola, 2010). Race has important implications for mental health problems in adolescence. The experience of racial discrimination has been shown to be stressful for both adults (Williams, Yan Yu, Jackson, & Anderson, 1997) and adolescents (Fisher, Wallace, & Fenton, 2000; Scott, 2003). Further, serious emotional disorders are more common in Black and Native American adolescents than in Whites (Cauce et al., 2002).

Not only are rates of mental health problems higher in racial minority adolescents, but diagnosis and help seeking behaviors might vary as well. The unmet need for mental health services appears to be greatest among racial and ethnic minority groups (Garland et al., 2005). Cuffe and colleagues (1995) reported that girls and African American children with psychiatric disorders were undertreated, and undertreatment of Hispanic or Latino youth has also been documented (Kataoka, Zhang, & Wells, 2002).

Cultural groups might differ on issues such as what constitutes a mental health problem (H Fabrega, Ulrich, & Mezzich, 1993; Horacio Fabrega, 1993). Some cultures might be more accepting of certain psychiatric symptoms (Alegría, Carson, Goncalves, & Keefe, 2011; Kessler et al., 2001) and differences have been found in parents' "distress thresholds" (Weisz et al., 1988) with respect to their children's mental health problems. Access to appropriate and culturally sensitive care is also likely to contribute to lower rates of treatment in non-White youth, particularly for those residing in underserved communities. There are significant racial and ethnic disparities in mental health care as well. The Institute of Medicine has documented that racial and ethnic minority youth have access to less and lower quality of care than their White counterparts (Nelson, 2002).

Family structure. Children of incarcerated parents are likely to undergo changes in family structure and caregiving (Glaze & Maruschak, 2008; Mumola, 2000; Myers, Smarsh, Amlund-Hagen, & Kennon, 1999). Research has shown that children of incarcerated parents are more likely to live in single parent households than children who have not experienced parental

incarceration (Kjellstrand & Eddy, 2011). When fathers are imprisoned, children's mothers usually care for them, but when mothers are incarcerated, only about a quarter of fathers retain custody (E. I. Johnson & Waldfogel, 2002; Mumola, 2000). Children of incarcerated parents are likely to be placed with grandparents or other relatives (Glaze & Maruschak, 2008; E. I. Johnson & Waldfogel, 2002), who often have limited resources and multiple existing needs such as chronic health problems (Burton, 1992; Butler & Zakari, 2005). About 3% of children with incarcerated parents are in foster care, and a similar number live unrelated adults or without any adult supervision (Glaze & Maruschak, 2008).

Parent-child relationships. Parental incarceration can have profound effects on relationships between parents and children. For parents who are incarcerated, maintaining connections with children while in custody is a particular challenge (Shlafer, Loper, & Schillmoeller, 2015). Many inmates serve their sentences hundreds of miles away from their families, and prisons are often located in rural areas that are difficult to get to (Nesmith & Ruhland, 2008). Further, visiting areas are not friendly to children and families (Nesmith & Ruhland, 2008; Poehlmann, Dallaire, Loper, & Shear, 2010; Shlafer et al., 2015).

There is little existing research on the associations between positive parent-child relationships and psychosocial outcomes in children of incarcerated parents. Scholars have examined the association between attachment relationships and child well-being in children of incarcerated parents, but this work has largely been conducted in very young or school-age children (Murray & Murray, 2010; Poehlmann, 2005b, 2010). However, children's perceptions of strong parent-child relationships have been examined as a protective factor for adolescent mental health in both normative and high-risk contexts. Work by Kandel and Davies (Kandel & Davies, 1982) demonstrated that self-reported feelings of parental closeness in high school students were associated with lower levels of depressed mood. Similarly, Amato (Amato, 1994) found that self-reported closeness to both mothers and fathers was associated with less psychological distress in a sample of older adolescents. Zweig showed that self-reported closeness with parents was negatively associated with depression and suicide attempt in high risk adolescents (Zweig, Phillips, & Lindberg, 2002).

Although it is often assumed that parent-child relationships suffer in adolescence, this is hardly a foregone conclusion. Research shows that some parent-child dyads experience a great deal of conflict and a corresponding decline in parent-child relationships during the adolescent years (Laursen & Williams, 1997), while other relationships remain sound. There is also evidence to suggest that parents and children with the worst relationships in early adolescence experience the greatest decline in relationships through the adolescent years. (Laursen, DeLay, & Adams, 2010). Thus, understanding how parent-child relationships might buffer children from poor mental health outcomes is particularly important during the adolescent years.

Research Questions

This study aims to explore the associations between parent-child relationships, parental incarceration, and mental health in children of incarcerated parents. First, I will describe the demographic context in which children of incarcerated parents in Minnesota are situated, including their race, family structure, exposure to poverty, and self-rated parental closeness. Second, I will examine indicators of compromised mental health in children of currently and formerly incarcerated parents as compared to children with no history of parental incarceration. Finally, I will examine whether the relationship between mental health and parental incarceration is moderated by the quality of parent child relationships.

Methodological Challenges

Datasets that can be used to examine relationships between parental incarceration, parent-child relationships and children's outcomes are challenging to obtain, and the lack of appropriate data sources has contributed to the relative paucity of research in this area. The most widely available data on incarcerated people are collected by corrections departments, yet few corrections departments systematically track the parenting status of inmates. Even when corrections data does include information about children, relying on data from prisoner informants presents some challenges. Parents involved in the criminal justice system may be reluctant to provide information about their children and families due to concerns about privacy, current or future involvement with the child welfare system, or sanctions for failure to provide financial

support for children (e.g. unpaid child support; Maruschak, Glaze, & Mumola, 2010); thus, data gathered directly from prisoners might significantly under-report parenting status.

However, parenting status is not the only limitation of using data from corrections departments to examine the children of incarcerated parents. Scholars are interested in knowing much more than simply whether incarcerated adults have children; other key issues include the quality of parent-child relationships, children's living arrangements, and children's well-being. Parents who are engaged in criminal activity often fail to be fully involved in their children's lives and they might be unable to accurately report information about their children. Therefore, relying on prisoner informants limits the scope of the research questions that scholars can undertake.

Large panel studies provide the ability to compare incarcerated and non-incarcerated persons, but these datasets usually do not collect data from the minor children of incarcerated parents. A notable exception is the National Longitudinal Study of Adolescent to Adult Health (Add Health; Harris et al., 2009). Add Health has been used to examine self-reported symptoms of depression in children of formerly incarcerated fathers (Swisher & Roettger, 2012) and diagnosis of depression, anxiety, and post-traumatic stress disorder in formerly incarcerated parents (Lee, Fang, & Luo, 2013). However, to our knowledge, no existing studies have examined self-reported mental health indicators among children of incarcerated mothers and fathers, and in children of both currently and formerly incarcerated parents, and no studies have examined parent-child closeness as a protective factor for adolescents with incarcerated parents. Given that children are the best reporters of their own emotional distress (Moretti, Fine, Haley, & Marriage, 1985), and their relationships with their parents, a promising alternative strategy for documenting the experiences and challenges of children with incarcerated parents is population-based surveillance of youth themselves.

In Minnesota, statewide surveillance of health-related behaviors is conducted tri-annually through the Minnesota Student Survey (MSS). The MSS is widely used for exploring risk and protective factors relevant to the healthy development of young people including suicide attempts (Borowsky, Ireland, & Resnick, 2001), self-injurious behavior (Taliaferro, Muehlenkamp, Borowsky, McMorris, & Kugler, 2012), and adolescent violence perpetration (Duke, Pettingell,

McMorris, & Borowsky, 2010). The survey contains information about demographic characteristics, emotional well-being, and relationships with parents. For the first time in 2013, children were asked to report whether they have a parent or guardian who is currently or has even been in jail or prison. Thus, the MSS represents the largest and most comprehensive dataset available for examining mental health of Minnesota youth who have experienced parental incarceration. Although certainly less generalizable, state-specific datasets have some advantages over national datasets in examining incarceration-related issues, because corrections environments and policies vary considerably by state.

Method

Data Source

Data for this study were drawn from the 2013 Minnesota Student Survey (MSS). The MSS, which is given to all fifth, eighth, ninth, and eleventh grade students in Minnesota, is a reflection of the overall well-being of youth in the state. It includes data on indicators of mental health including internalizing symptoms, self-injury, suicidal ideation and suicide attempts. It also includes information on parental incarceration (with the exception of fifth graders, for whom this item was deemed too sensitive for inclusion), and demographic characteristics. As such, the MSS is an ideal dataset for understanding the prevalence of mental health problems of youth in Minnesota with and without an incarcerated parent.

The MSS is a joint endeavor of the Minnesota Departments of Health, Education, Human Services, and Public Safety. MSS data are freely available to researchers from the Minnesota Department of Health. The survey is administered to middle and high school students every three years, including public, charter, and tribal schools, juvenile correctional facilities, and alternative learning centers. Student participation is voluntary and all surveys are completely anonymous. No identifying information is used on student surveys, so answers cannot be traced to an individual student. All school districts that participate in the survey are required to follow federal laws regarding parental notification as required by the Family Educational Rights and Privacy Act (FERPA) and the Protection of Pupil Rights Amendment (PPRA). The PPRA requires that schools that participate in the survey notify parents that the survey will be administered, provide

parents the opportunity to review the survey instrument, and allow parents to opt out of their child's participation. In addition, students can choose not to participate, or may skip any question on the survey. In 2013, 71% of eighth graders, 69% of ninth graders, and 62% of eleventh graders participated (Minnesota Department of Education, 2015).

In 2013 - the most recent year for which data is available - the survey was completed by 42,841 students in eighth grade, 42,381 students in ninth grade and 36,958 in eleventh grade (*N* = 122,180). For the first time in 2013, youth in eighth, ninth, and eleventh grade were asked to report whether they have a parent or guardian who has even been in jail or prison. Response options included (a) never, (b) a parent or guardian is currently in jail or prison, or (c) a parent or guardian was in jail or prison in the past. Thus, the MSS represents the largest and most comprehensive dataset available that has the ability to shed light on the experiences of Minnesota youth who have experienced incarceration.

Participants

Participants in this study were 122,180 children in eighth (*n* = 42,841), ninth (*n* = 42,381), and eleventh (*n* = 36,958) grade in public schools in the state of Minnesota who provided data on the 2013 MSS survey. Characteristics of the participants are discussed below.

Measures

Dependent variables. Indicators of mental health status tested in this study include: internalizing symptoms; suicidal ideation; suicide attempts; self-injurious behavior; diagnosis of mental, emotional or behavioral problems; and treatment for mental health concerns.

Internalizing problems. Internalizing problems were measured with five items indicating significant mental distress (e.g., anxiety, intrusive thoughts, somatization) in the past 12 months. These items were drawn from a validated mental health screening instrument (Dennis, Chan, & Funk, 2006) that has been shown to be strongly correlated with the 43-item mental distress subscale of the Global Appraisal of Individual Needs (Dennis et al., 2006; Dennis, Titus, White, & Unsicker, 2003). As recommended by the instrument developers, endorsement of one item was categorized as moderate and endorsement of three items was categorized as high probability of diagnosis with an internalizing disorder (Dennis et al., 2006).

Suicidal ideation. Suicidal ideation was measured with one item: “Have you ever seriously considered attempting suicide?” Response choices were “No,” “Yes, during the last year,” or “Yes, more than a year ago.” Responses were coded 0 = “No,” 1 = “Yes, during the last year,” or “Yes, more than a year ago.”

Suicide attempts. History of suicide attempt was measured with one item: “Have you ever actually attempted suicide?” Response choices were “No,” “Yes, during the last year,” or “Yes, more than a year ago.” Responses were coded 0 = “No,” 1 = “Yes, during the last year,” or “Yes, more than a year ago.”

Self-injurious behavior. Self-injurious behavior was measured with one item: “During the last 12 months, how many times did you do something to purposely hurt or injure yourself without wanting to die, such as cutting, burning, or bruising yourself on purpose?” Six response choices ranged from “0 times” to “20 or more times.” Responses were coded 0 = “0 times” 1 = “1 to 20 more times.”

Diagnosis of mental, emotional or behavioral problems. Diagnosis of a mental, emotional, or behavioral disorder was measured with one item: “Do you have any long-term mental health, behavioral, or emotional problems? Long-term means lasting 6 months or more.” Responses were “Yes” or “No”, and were coded 1 or 0, respectively.

Treatment for mental health concerns. Treatment for mental health concerns was measured with one item: “Have you ever been treated for a mental health, emotional or behavioral problem?” Responses were coded 0 = “No,” 1 = “Yes, during the last year,” or “Yes, more than a year ago.”

Independent Variables. Predictor variables in this study were experience of parental incarceration, race, family structure, poverty, gender, and age.

***Parental incarceration*.** Parental incarceration was assessed with one item “Have any of your parents or guardians ever been in jail or prison? (Mark ALL that apply).” Answer choices were “None of my parents or guardians has ever been in jail or prison,” “Yes, I have a parent or guardian in jail or prison right now,” and “Yes, I have a parent or guardian in jail or prison in the past.” Most respondents (77.5%) indicated no experience of parental incarceration, 13% indicated

a formerly incarcerated parent, and 1.8% indicated a currently incarcerated parent; 7.7% were missing. There were a small number of children (*n* = 579; 0.47%) who reported they had both a currently and formerly incarcerated parent. Based on the expectation that having a currently incarcerated parent confers greater risk for mental health problems than having a formerly incarcerated parent, these children were included in the currently incarcerated parent category. Thus, parental incarceration was a three-level variable coded 0 = "No experience of parental incarceration," 1 = "Formerly incarcerated parent," and 2 = "Currently incarcerated parent."

***Race and Ethnicity*.** Race and ethnicity were measured with six items. Children were asked to endorse whether they identified with any of the following racial or ethnic groups: Hispanic or Latino/a; American Indian or Alaskan Native; Asian; Black, African, or African American; Native Hawaiian or Other Pacific Islander; White. Children could endorse multiple races and ethnicities. Ideally, the racial and ethnic groups would be compared, given potential differential outcomes by race or ethnic group. However, because a large majority of the sample was White and non-Hispanic, sample sizes for the other races and ethnicities were too small for reliable inferential statistics to be computed. Thus, race and ethnicity were treated dichotomously; based on responses to the individual items, responses were coded 0 if youth endorsed only "White," otherwise they were coded 1.

Family Structure. Family structure was assessed with one item: "Which adults do you live with? (*Mark ALL that apply*)." Responses included "Biological mother (the women who gave birth to me)," "Biological father," "Adoptive mother," "Adoptive father," "Sometimes mother, sometimes father," "Stepmother," "Stepfather," "Parent's girlfriend/partner," "Parent's boyfriend/partner," "Grandparent(s) or other adult relative(s)," "Foster parent(s)," "Other adult(s) I am not related to," and "None." For purposes of the logistic regression models, responses were coded 0 if youth endorsed living with at least one biological parent, otherwise they were coded 1. Although research has demonstrated that family structure alone accounts for little of the variability in children's mental health outcomes (Carlson & Corcoran, 2001), it has important implications for lack of involvement in children's lives (Carlson, 2006), which, in the context of parental incarceration represents an important contextual risk.

Poverty. Poverty status was assessed with three items: “Do you currently get free or reduced-price lunch at school?” “During the last 30 days, have you had to skip meals because your family did not have enough money to buy food?” and “During the past 12 months, have you stayed in a shelter, somewhere not intended as a place to live, or someone else’s home because you had no other place to stay?” Respondents who endorsed any one of these items were coded 1, otherwise they were coded 0.

Parental closeness. Parental closeness was created by combining two items about communication (one each for both mother and father) with a subjective rating of how much children feel their parents care about them. Similar strategies have been used to measure parent-child relationships in previous studies using large public datasets (Kierkus & Baer, 2002; Zweig et al., 2002). Two items asked about communicating with mothers and fathers, respectively: “Can you talk to your father about problems you are having?” and “Can you talk to your mother about problems you are having?” Response options for both questions were “Yes, most of the time,” “Yes, some of the time,” “No, not very often,” “No, not at all,” and “My father [or mother] is not around.” Responses were coded so that higher scores indicated better communication with parents. The response choices “No, not at all” and “My father [or mother] is not around” were combined, resulting in a four-point scale. Responses to the items about talking to fathers and mothers were highly correlated ($r = .432$, $p < .001$). Talking to mother was rated slightly higher (on average) than talking to father – 53.2% rate mother and father the same, 10.3% rate father better, 35.0% rate mother better, and 1.5% are missing one of the variables. The two items were averaged to create a single item that indexed parent-child communication. Respondents with missing data for one of the variables received the score for the parent for whom data was provided.

The third item that was used to create parental closeness was “How much do you feel your parents care about you?” Answer choices were “Not at all,” “A little,” “Some,” “Quite a bit,” and “Very much.” Responses to this item were highly correlated with the parent-child communication variable ($r = .486$, $p < .001$). Because the parent-child communication variable was on a four-point scale and the perceptions of parental care variable was on a five-point scale,

both variables were standardized and then averaged. The final parental closeness variable ranged from -4.01 to 1.03 (*M* = -0.0048, *SD* = 0.87).

Data Analysis

Because all of the dependent variables were binary (0 = problem not observed, 1= problem observed) and the independent variables were both binary and continuous, the dependent variables were examined using a series of consecutive logistic regression models. For all dependent variables, I modeled the probability that the mental health problem was observed. First, I began by modeling the dependent variable using age, gender, family structure, poverty, race/ethnicity and parental incarceration. Next, I ran each of the models with the previous variables, parental closeness, and the closeness X incarceration interaction. Descriptive statistics were analyzed with SPSS version 22. Logistic regression models and multiple imputation were conducted in SAS version 9.4.

Missing data. Prior to analyses, data were inspected for missingness. Missing data on the mental health variables ranged from 2.7% for diagnosis of a mental, emotional, or behavioral problem to 7.0% for suicidal ideation. Missing data for the independent variables were less than 2%, with the exception of the parental incarceration variable, which has a missing rate of 7.7%. Chi-square tests and t-tests were used to compare those who were missing the parental incarceration variable to those whose parental incarceration status was known for all independent and dependent variables. Tests indicated that there were small but significant differences between the two groups on all the mental health outcome variables with the exception of suicidal ideation, with children who were missing the parental incarceration variable more likely to exhibit the mental health problem. Children missing the parental incarceration variable were also different from those not missing the variable on the independent variables; they were less likely to be White and to be living with at least one biological parent, and more likely to be boys, and to be experiencing poverty than those children who were not missing the parental incarceration variable. There was a statistically significant but practically negligible difference in age between children who were and were not missing the parental incarceration variable. Children missing the

parental incarceration variable also rated their parental closeness lower than children not missing incarceration. Additional information about missing data can be found in the Appendix.

Because there were significant differences between children who were and were not missing data on parental incarceration, multiple imputation was used to reduce the potential bias. Multiple imputation can be used even when missing data are known to be nonignorable (P. Allison, 2002; Schafer, 1997). With multiple imputation, each missing value is replaced by a plausible value from a specified distribution in a determined number of parallel datasets. Each complete dataset is then analyzed and the results are combined to obtain a pooled overall metric that reflects the uncertainty associated with the missing data. In this study, the SAS MI FCS (fully conditional specification) procedure was used because it appropriately imputes both quantitative and categorical variables. The FCS method is a sequential procedure that starts with the variables with the least missing data and proceeds until the variable with the most missing data. Imputed values from the each step are used as predictors in the imputation equations in subsequent steps. PROC MI FCS was used to compute five complete datasets. At levels of missingness of 8% or less as observed in this study, five imputed datasets are 98% efficient (Schafer & Graham, 2002).

Results

Sample Demographics

On average, youth were 14.87 years old (*SD* = 1.34, *Range* = 12 to 19 years), and half of the youth in the sample (50.2%, *n* = 61,341) were boys. Reflecting the demographics of the state of Minnesota as a whole, most of the youth in the sample (72.9%) were White and not Hispanic. Just under one-third of the youth (30.9%) were experiencing at least one form of poverty, and 8.4% were not living with any biological parents.

The most common mental health indicator was risk for mild internalizing disorder, which was endorsed by 54.4% of the youth, while a quarter of youth (25.8%) met the criteria for moderate risk of internalizing disorder. The next most common mental health concern was suicidal ideation, which was endorsed by 17.7% of the sample, while suicide attempt was endorsed by 6.1% of youth. Just under 15% of youth said they had engaged in self-injurious

behavior. Twelve percent of the sample indicated they had been diagnosed with a mental, emotional, or behavioral problem, and 13.6% had received treatment for a mental health concern.

Differences Among Groups by Experience of Incarceration

Results of ANOVA and chi-square analyses indicated significant differences by parental incarceration status for all independent and dependent variables. Because the omnibus test was significant, follow-up analyses were conducted to explore differences between each of the three groups (i.e., never vs. former vs. current). A bonferroni adjustment was used to adjust the alpha level and correct for the use of multiple non-independent tests. All tests of differences between groups on independent variables were significant with the exception of age and gender, and results were in the expected direction. For example, a greater proportion of children with formerly incarcerated parents were experiencing poverty compared to children with no experience of incarceration, and a greater proportion of children with currently incarcerated parents were experiencing poverty compared to both other groups.

Analyses also indicated significant differences between groups on all of the dependent variables, and follow up analyses revealed results in the expected direction. For each of the dependent variables, children of currently incarcerated parents were most likely to exhibit the outcome, followed by children of formerly incarcerated parents, and then children with no history of parental incarceration.

Factors Associated with Mental Health Problems

Hierarchical logistic regression models were conducted in order to examine the associations between risk and protective factors and mental health problems. The PROC LOGISTIC procedure was used on the multiply imputed datasets, and the PROC MIANALYZE procedure was used to combine the results. The first step of the model included race/ethnicity, family structure, poverty, age, gender, and the three-level parental incarceration variable. The second step of the model included the previous variables, the parental closeness variable, and an interaction term between parental closeness and incarceration (closeness X incarceration).

Results of logistic regression models are shown in Table 2. As expected, age and gender were positively associated with mental health outcomes, with older children and girls being at

greater risk. Family structure (ORs = 1.25 to 1.71) and poverty (ORs = 1.33 to 1.85) were also positively associated with poor mental health outcomes across all models. There were mixed results for race. Being non-White was positively associated with mild internalizing, suicidal ideation, suicide attempt, and self-injury, but was negatively associated with diagnosis of mental, emotional, or behavioral problem, and treatment for a mental health concern. There was no association between race and moderate internalizing symptoms.

Across all the mental health outcomes, results show that children of incarcerated parents are at greater risk for poor mental health outcomes, with children of currently incarcerated parents displaying the most risk, relative to children of formerly incarcerated parents. Across all seven outcomes, children of formerly incarcerated parents were about twice as likely to experience the outcome, and children of currently incarcerated parents were between two and a half and four times as likely to experience the outcome. Of the substantive predictors (incarceration, family structure, poverty, and race), parental incarceration had the strongest association with poor mental health outcomes.

Parental closeness was protective against mental health outcomes in all models. However, the closeness X incarceration interaction was also significant in all models, indicating that the effect of parental closeness was moderated by parental incarceration status. That is, the protective effect of parental closeness was strongest for children with no experience of parental incarceration. For example, among children with no experience of parental incarceration, higher parental closeness was associated with less than half the risk of moderate internalizing problems (OR = .40) but, for children with formerly incarcerated parents, the same change in parental closeness was associated with an odds of .51, and for children with currently incarcerated parents, the odds were .59. See Figure 1 for a graphical representation of the closeness by incarceration interaction for moderate internalizing.

Discussion

Results of this study indicate that parental incarceration is strongly associated with higher rates of mental health problems (e.g. internalizing, self-injurious behaviors, suicide attempt, etc.) among adolescents in the state of Minnesota. Furthermore, the association between parental

incarceration and poorer mental health in youth is apparent even after controlling for socio-demographic risk factors that are often present in the lives of children whose parents have been incarcerated such as race, poverty, and family structure. These results lend support to the claim that parental incarceration is a risk factor for compromised mental health in children above and beyond its association with other known risk factors (Murray & Farrington, 2008b; Wildeman, Wakefield, & Turney, 2013). Findings from this study emphasize that the incarceration of a parent acts as an additional risk factor in the lives of young people.

This study uses large-scale health surveillance data gathered directly from young people to assess the relationship between parental incarceration and symptoms of mental health problems, treatment for mental health concerns, and presence of mental health diagnoses. To my knowledge, this study is the first to document an association between self-reported mental health concerns and both current and former incarceration of mothers and fathers. Population-based data represents a methodological improvement over prior efforts in this area, which have relied on prisoner informants or small sample sizes while attempting to match children of incarcerated parents with similar controls. This study used data from a majority of public school students in the state of Minnesota and an adequate procedure to adjust for missingness, which increases the generalizability of the findings.

Findings from this study demonstrate that mental health concerns are quite prevalent among Minnesota youth, with mild internalizing experienced by more than 50% of youth, moderate internalizing by more than a quarter of youth, and 6% of youth attempting suicide. Furthermore, the prevalence of mental health problems is considerably higher than the prevalence of treatment for mental health problems across all groups. For example, for youth with currently incarcerated parents, nearly half report moderate symptoms of internalizing, and more than a third report at least one instance of purposeful self-injury, but only 29.7% report any type of treatment for a mental health concern. This disparity reflects the documented gap between need for mental health treatment and service utilization in adolescents (Merikangas et al., 2011). Early intervention for serious mental health concerns is essential due to the poorer long-term outcomes associated adolescent-onset mental health problems (Zisook et al., 2007), as well as the potential

for mental health problems to compromise other areas of functioning (Cox et al., 2010). The findings concur with prior research in adult populations indicating that individuals from racial and ethnic minority groups have less access to adequate health care than Whites (Garland et al., 2005; Nelson, 2002). This study found that children who are members of ethnic or racial minority groups are more likely than White children to exhibit most of the mental health problems examined in this study; however, those same children are less likely than White children to have been diagnosed with a mental, emotional, or behavioral problem or to have received treatment for mental health concerns. This disparity is an important public health concern that underscores the need for more access to high quality health care for minority populations, as well as culturally-specific education programs about symptoms of compromised mental health in young people.

This study is unique in that it investigated the effect of parental incarceration both for youth with currently incarcerated parents, and youth whose parents had been incarcerated at some point in the past. The ability to compare children with currently and formerly incarcerated parents to children with no experience of parental incarceration reveals several unique findings. First, children of currently incarcerated parents are at highest risk for poor mental health outcomes. For example, children with currently incarcerated parents are 3.75 times as likely to report a suicide attempt as children with no experience of parental incarceration, after controlling for relevant risk factors examined in this study. Children of formerly incarcerated parents are more than 2.5 times as likely to report poor mental health outcomes as their peers with no experience of parental incarceration. This finding indicates that the substantially increased risk for poor mental health associated with parental incarceration is not limited to the time during which parent is incarcerated. These findings emphasize the serious health disparities that exist for the children of incarcerated people, which are likely to persist into adulthood (Fergusson & Woodward, 2002) and contribute to intergenerational transmission social inequality (Wakefield & Uggen, 2010).

While parental closeness partially buffers children from poor mental health outcomes associated with parental incarceration, the protective effect of strong parent-child relationships appears weakest for children in the contexts of highest risk. That is, although parental closeness

is negatively associated with mental health problems for all children, the strength of the association is greatest for those children with no history of parental incarceration, followed by those with formerly incarcerated parents, and then those with currently incarcerated parents. The findings of this study demonstrate that although strong parent-child relationships are protective against mental health problems, they appear less so in contexts of higher adversity. These results are consistent with previous scholarship demonstrating that in some particularly adverse contexts, even exceptionally high parenting quality is, by itself, unlikely to fully buffer children from negative outcomes associated with adversity. For example, in a study of homeless families residing in a shelter, Masten and colleagues found that parenting quality partially buffered children from negative outcomes (Miliotis, Sesma, & Masten, 1999).

The finding that parenting quality alone is insufficient to fully protect children in adverse circumstances from negative outcomes is important because those highly adverse contexts are exactly the arenas in which scholars would like to identify protective mechanisms that serve to promote well-being in children. There is a tremendous amount of scholarship across disciplines such as public health, prevention science, and child development that aim to elucidate factors of children and their environments that contribute to their resilience (Fergus & Zimmerman, 2005; Masten, 2007; Sesma, Mannes, & Scales, 2013). While this work is essential, the findings of this study indicate that some types of adverse contexts are fundamentally risky. Parental incarceration is one such context. The incarceration of a parent contributes to an increased risk of mental health problems in young people, despite strong parent-child relationships. It is important for scholars to remember that the most effective interventions for children in very adverse contexts are likely to be multifaceted programs that target several risk and protective factors, including individual child-level factors, children's relationships, and the environments in which they reside.

There are several important implications of these findings. The children of incarcerated parents are a vulnerable population and they should continue to be the targets of intervention efforts aiming to buttress their personal and social resources, including strong relationships with caregivers. Education programs for incarcerated parents often include prison-specific strategies

for communicating with children (Loper & Tuerk, 2006), but it is unclear how effective such programs are and how many inmates have access to them (Loper & Novero, 2010). Many inmates do not return to their families upon release from prison (Day, Acock, Bahr, & Arditti, 2005) and those inmates who do attempt to reconcile with families often have ambiguous or unrealistic expectations about relationships with spouses and children. There is very little research on parent-child relationships in the period immediately following the parole of a parent, but existing studies point to increased parent-child conflict in parents who were recently incarcerated (Aaron & Dallaire, 2010).

Limitations

Although the use of large surveillance datasets provide an excellent opportunity to examine the relationships between family characteristics, parental incarceration and compromised mental health, there are a number of limitations to the current study that must be acknowledged. First, there are several points of ambiguity in the available information about parental incarceration that could be important. For example, for those students with a previously incarcerated parent, we cannot know when the parent was incarcerated. Evidence indicates that younger children might experience parental incarceration quite differently than older children or adolescents (Shlafer & Poehlmann, 2010). Without this level of specificity in the current data set, I am unable to address this in my analyses. Similarly, I do not know whether the incarcerated parent was a mother or father, and for children who endorsed having both a currently and formerly incarcerated parent, it is unclear whether one parent experienced multiple incarcerations, or both parents were incarcerated. This is an important issue because there is some research indicating that under some very particular circumstances, such as abuse or neglect, maternal incarceration could actually have a protective effect (Wildeman et al., 2013). I also do not know whether the parent who was incarcerated was a custodial parent at the time of the incarceration. Although research indicates that children suffer when parents are incarcerated regardless of whether the parent was living with the child at the time of incarceration or not, children who were separated from their custodial parents due to incarceration might experience parental incarceration as a more salient life event than children of non-custodial parents. Finally, I

am not able to measure the total number of incidents of parental incarceration and am therefore unable to distinguish between children who experienced a single or brief bout of parental incarceration (i.e., a short term jail stay) from those whose parents are serial recidivists; the strength of the associations between parental incarceration and negative mental health outcomes could be driven by a subset of children who experienced the most disruptive effects of parental incarceration.

In addition to the issues surrounding the ambiguity of parental incarceration, I am unable to examine some aspects of the context of parental incarceration that could be substantively important. Although I included relevant demographic variables in an attempt to minimize bias due to confounding characteristics, it is certainly possible that those children whose parents experienced incarceration are systematically different than those whose parents have never been incarcerated, and that it is those systematic differences that account for the increased odds of experiencing mental health problems. Particularly, I do not have any information about the mental health status of parents; given the potential genetic association underpinnings of mental health problems (Caspi et al., 2003; Kendler & Walters, 1994) this is an important omission. Additionally, because it is well-documented in the literature that mental health is a contributing factor for adult incarceration, it could be that parents' compromised mental health is a common antecedent of both parental incarceration and children's mental health problems. Perhaps the most important limitation of the current study is that I do not have any measure of adolescents' functioning pre-incarceration, thus I cannot know whether problems actually increase following incarceration. Because this study utilized cross-sectional data, I must refrain from making causal inferences about the effect of parental incarceration on children's mental health outcomes. These results should be replicated with longitudinal data.

Implications for Policy

The intersections between correctional policies and the health and well-being of young people are often overlooked. Parental incarceration is an issue of social policy. In efforts to reform the system of mass incarceration in the United States, the health and well-being of the children of incarcerated people must be considered. Evidence of poorer mental health functioning in children

of incarcerated parents should be used to advocate for alternative sentencing arrangements for parents, especially those who commit non-violent crimes.

Mental health problems are a serious concern for young people. This study showed that children of incarcerated parents report higher levels of mental health problems than children without an incarcerated parent. Although strong parent-child relationships are an important protective factor for young people, very high-risk contexts such as poverty and parental incarceration take a toll on the mental well-being of young people.

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Figure 1. *Odds ratios and 95% confidence intervals for incarceration by closeness interaction for moderate internalizing.*

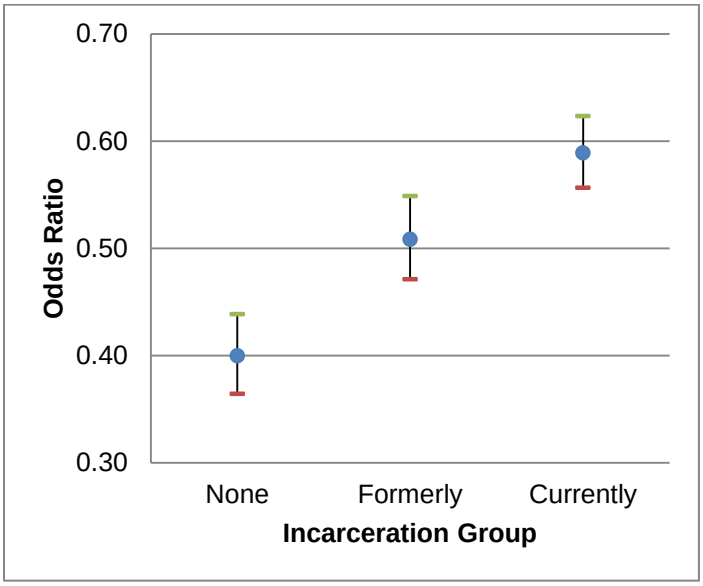

Table 1

Descriptive Statistics by Parental Incarceration Status

	Full Sample	0 = None	1 = Former	2 = Current	0 vs. 1	0 vs. 2	1 vs. 2
	Mean (SD)	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*			
Age (years)	14.87 (1.34)	14.88 (1.34)	14.83 (1.31)	14.79 (1.29)	***	**	
Parental Closeness	-0.00 (.87)	0.10 (.79)	-0.44 (.99)	-0.84 (1.11)	***	***	***
Gender (1 = Female)	0.50	0.50	0.54	0.48	***		***
Race (1 = Not White)	0.26	0.22	0.39	0.54	***	***	***
Poverty (1 = At least 1 risk)	0.31	0.24	0.60	0.75	***	***	***
Family Structure (1 = No bio parents)	0.08	0.07	0.13	0.21	***	***	***
Mild Internalizing (1 = Yes)	0.54	0.50	0.74	0.77	***	***	**
Moderate Internalizing (1 = Yes)	0.26	0.22	0.44	0.50	***	***	***
Self Injury (1 = Yes)	0.15	0.12	0.27	0.37	***	***	***
Suicidal Ideation (1 = Yes)	0.18	0.15	0.33	0.37	***	***	***
Suicide Attempt (1 = Yes)	0.06	0.04	0.14	0.21	***	***	***
Diagnosis of MEB problem (1 = Yes)	0.12	0.10	0.22	0.28	***	***	***
Treatment for MEB problem (1 = Yes)	0.14	0.12	0.23	0.30	***	***	***
N	122,180	94,732	15,853	2,202			

Note: Chi-square tests comparing children with no history of parental incarceration, those with formerly incarcerated parents, and those with currently incarcerated parents. Descriptives are based on nonimputed data.

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2

Logistic Regression Models of Risk and Protective Factors Associated with Mental Health Outcomes

	Diagnosis of Problem						Mental Health Treatment					
	B		*SEB*	OR	LCL	UCL	*B*		*SEB*	OR	LCL	UCL
Model 1												
Age	0.05	***	0.01	1.05	1.04	1.07	0.10	***	0.01	1.11	1.09	1.12
Gender (ref = Male)	0.50	***	0.02	1.65	1.59	1.71	0.33	***	0.02	1.39	1.34	1.44
Family Structure (ref = At least 1 bio parent)	0.44	***	0.03	1.55	1.47	1.64	0.54	***	0.03	1.71	1.63	1.81
Poverty (ref = At least 1 risk)	0.42	***	0.02	1.52	1.46	1.58	0.28	***	0.02	1.33	1.28	1.38
Race/Ethnicity (ref = White Non Hispanic)	-0.16	***	0.02	0.85	0.81	0.89	-0.23	***	0.02	0.80	0.76	0.83
Incarceration (ref = None)												
Formerly	0.74	***	0.02	2.10	2.01	2.20	0.69	***	0.02	1.98	1.90	2.07
Currently	1.01	***	0.05	2.76	2.49	3.05	1.02	***	0.05	2.76	2.52	3.03
Constant	-3.31	***	0.10	0.04	0.03	0.04	-3.76	***	0.10	0.02	0.02	0.03
Model 2												
Age	0.04	***	0.01	1.04	1.02	1.05	0.09	***	0.01	1.10	1.08	1.11
Gender (ref = Male)	0.43	***	0.02	1.54	1.49	1.60	0.27	***	0.02	1.32	1.27	1.36
Family Structure (ref = At least 1 bio parent)	0.26	***	0.03	1.30	1.23	1.38	0.42	***	0.03	1.52	1.44	1.61
Poverty (ref = At least 1 risk)	0.21	***	0.02	1.23	1.18	1.29	0.13	***	0.02	1.14	1.10	1.19
Race/Ethnicity (ref = White Non Hispanic)	-0.27	***	0.02	0.76	0.73	0.80	-0.30	***	0.02	0.74	0.71	0.77
Incarceration (ref = None)												
Formerly	0.63	***	0.03	1.89	1.79	1.99	0.61	***	0.02	1.85	1.76	1.94
Currently	0.84	***	0.07	2.31	1.99	2.67	0.88	***	0.06	2.41	2.13	2.73
Closeness	-0.65	***	0.01	0.52	0.51	0.53	-0.48	***	0.01	0.62	0.61	0.64
Incarceration x closeness		***						***				
Closeness at Incarceration = None	-0.65	***	0.02	0.52	0.50	0.54	-0.47	***	0.02	0.62	0.60	0.64
Closeness at Incarceration = Formerly	-0.46	***	0.02	0.63	0.61	0.65	-0.30	***	0.01	0.74	0.72	0.76
Closeness at Incarceration = Currently	-0.42	***	0.03	0.66	0.62	0.70	-0.29	***	0.02	0.75	0.72	0.77
Constant	-3.04	***	0.11	0.05	0.04	0.06	-3.56	***	0.10	0.03	0.02	0.03

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2 Continued

	Internalizing - Mild						Internalizing - Moderate					
	B		*SEB*	OR	LCL	UCL	*B*		*SEB*	OR	LCL	UCL
Model 1												
Age	0.07	***	0.00	1.07	1.06	1.08	0.08	***	0.01	1.08	1.07	1.09
Gender (ref = Male)	0.83	***	0.04	2.30	2.07	2.56	0.90	**	0.12	2.45	1.79	3.37
Family Structure (ref = At least 1 bio parent)	0.23	***	0.03	1.25	1.18	1.33	0.27	***	0.02	1.31	1.25	1.37
Poverty (ref = At least 1 risk)	0.46	***	0.03	1.59	1.46	1.72	0.52	***	0.02	1.69	1.60	1.78
Race/Ethnicity (ref = White Non Hispanic)	0.23	*	0.07	1.25	1.04	1.51	0.16		0.07	1.18	0.98	1.42
Incarceration (ref = None)												
Formerly	0.79	***	0.04	2.20	2.00	2.42	0.78	***	0.03	2.18	2.02	2.36
Currently	0.90	***	0.07	2.45	2.12	2.84	0.96	***	0.06	2.61	2.29	2.97
Constant	-1.58	***	0.09	0.21	0.17	0.25	-3.06	***	0.20	0.05	0.03	0.08
Model 2												
Age	0.06	***	0.00	1.06	1.05	1.07	0.06	***	0.01	1.07	1.05	1.08
Gender (ref = Male)	0.80	***	0.04	2.24	1.99	2.52	0.88	**	0.13	2.40	1.68	3.42
Family Structure (ref = At least 1 bio parent)	0.06		0.03	1.06	1.00	1.13	0.04		0.03	1.04	0.98	1.11
Poverty (ref = At least 1 risk)	0.27	***	0.03	1.30	1.21	1.41	0.28	***	0.02	1.32	1.26	1.39
Race/Ethnicity (ref = White Non Hispanic)	0.11		0.07	1.12	0.92	1.36	0.03		0.08	1.03	0.82	1.29
Incarceration (ref = None)												
Formerly	0.58	***	0.03	1.79	1.68	1.90	0.62	***	0.04	1.86	1.71	2.03
Currently	0.67	***	0.07	1.95	1.69	2.26	0.75	***	0.08	2.12	1.81	2.49
Closeness	-0.85	***	0.04	0.43	0.39	0.47	-0.92	***	0.04	0.40	0.36	0.45
Incarceration x closeness		***						***				
Closeness at Incarceration = None	-0.85	***	0.04	0.43	0.39	0.47	-0.92	***	0.05	0.40	0.36	0.44
Closeness at Incarceration = Formerly	-0.66	***	0.06	0.52	0.46	0.58	-0.68	***	0.04	0.51	0.47	0.55
Closeness at Incarceration = Currently	-0.39	***	0.06	0.68	0.61	0.76	-0.53	***	0.03	0.59	0.56	0.62
Constant	-1.20	***	0.10	0.30	0.25	0.37	-2.80	***	0.22	0.06	0.03	0.11

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2 Continued

	Self-Injurious Behaviors						Suicidal Ideation					
	B		*SEB*	OR	LCL	UCL	*B*		*SEB*	OR	LCL	UCL
Model 1												
Age	-0.04	***	0.01	0.96	0.95	0.97	0.10	***	0.01	1.11	1.10	1.12
Gender (ref = Male)	1.00	***	0.02	2.72	2.61	2.84	0.77	***	0.02	2.16	2.07	2.25
Family Structure (ref = At least 1 bio parent)	0.35	***	0.03	1.42	1.34	1.51	0.38	***	0.03	1.46	1.39	1.54
Poverty (ref = At least 1 risk)	0.49	***	0.02	1.64	1.58	1.70	0.41	***	0.02	1.50	1.45	1.56
Race/Ethnicity (ref = White Non Hispanic)	0.13	***	0.02	1.14	1.08	1.19	0.08	**	0.02	1.08	1.03	1.14
Incarceration (ref = None)												
Formerly	0.79	***	0.02	2.20	2.10	2.31	0.88	***	0.02	2.41	2.32	2.51
Currently	1.18	***	0.05	3.25	2.96	3.57	1.04	***	0.05	2.82	2.58	3.08
Constant	-2.16	***	0.10	0.12	0.09	0.14	-3.91	***	0.09	0.02	0.02	0.02
Model 2												
Age	-0.06	***	0.01	0.94	0.93	0.95	0.10	***	0.01	1.10	1.09	1.12
Gender (ref = Male)	0.96	***	0.02	2.62	2.50	2.74	0.72	***	0.02	2.06	1.97	2.16
Family Structure (ref = At least 1 bio parent)	0.12	***	0.03	1.13	1.06	1.20	0.14	***	0.03	1.16	1.09	1.22
Poverty (ref = At least 1 risk)	0.24	***	0.02	1.27	1.22	1.32	0.13	***	0.02	1.14	1.10	1.19
Race/Ethnicity (ref = White Non Hispanic)	0.00		0.03	1.00	0.95	1.05	-0.06	*	0.03	0.94	0.89	0.99
Incarceration (ref = None)												
Formerly	0.68	***	0.03	1.98	1.86	2.09	0.75	***	0.02	2.12	2.03	2.22
Currently	0.98	***	0.07	2.65	2.28	3.08	0.83	***	0.06	2.30	2.03	2.61
Closeness	-0.86	***	0.01	0.42	0.41	0.43	-0.92	***	0.01	0.40	0.39	0.41
Incarceration x closeness		***						***				
Closeness at Incarceration = None	-0.86	***	0.03	0.42	0.40	0.44	-0.92	***	0.03	0.40	0.38	0.42
Closeness at Incarceration = Formerly	-0.60	***	0.02	0.55	0.53	0.57	-0.67	***	0.02	0.51	0.49	0.53
Closeness at Incarceration = Currently	-0.56	***	0.03	0.57	0.53	0.61	-0.58	***	0.03	0.56	0.53	0.59
Constant	-1.78	***	0.11	0.17	0.14	0.21	-3.73	***	0.10	0.02	0.02	0.03

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2 Continued

	Suicide Attempt					
	B		*SEB*	OR	LCL	UCL
Model 1						
Age	0.13	***	0.01	1.14	1.11	1.16
Gender (ref = Male)	0.78	***	0.03	2.17	2.04	2.32
Family Structure (ref = At least 1 bio parent)	0.48	***	0.04	1.62	1.51	1.74
Poverty (ref = At least 1 risk)	0.61	***	0.03	1.85	1.75	1.95
Race/Ethnicity (ref = White Non Hispanic)	0.21	***	0.03	1.23	1.16	1.30
Incarceration (ref = None)						
Formerly	0.98	***	0.03	2.66	2.51	2.82
Currently	1.37	***	0.06	3.94	3.51	4.42
Constant	-5.69	***	0.14	0.00	0.00	0.00
Model 2						
Age	0.12	***	0.01	1.12	1.10	1.14
Gender (ref = Male)	0.69	***	0.03	1.99	1.87	2.13
Family Structure (ref = At least 1 bio parent)	0.21	***	0.04	1.23	1.14	1.33
Poverty (ref = At least 1 risk)	0.32	***	0.03	1.38	1.30	1.47
Race/Ethnicity (ref = White Non Hispanic)	0.09	**	0.03	1.09	1.02	1.16
Incarceration (ref = None)						
Formerly	0.93	***	0.04	2.53	2.36	2.72
Currently	1.32	***	0.09	3.75	3.16	4.46
Closeness	-0.90	***	0.02	0.41	0.39	0.42
Incarceration x closeness		***				
Closeness at Incarceration = None	-0.90	***	0.04	0.41	0.38	0.44
Closeness at Incarceration = Formerly	-0.62	***	0.03	0.54	0.51	0.57
Closeness at Incarceration = Currently	-0.50	***	0.03	0.61	0.57	0.64
Constant	-5.57	***	0.14	0.00	0.00	0.01

* $p < .05$, ** $p < .01$, *** $p < .001$

Appendix

Comparison of Study Variables by Missing Parental Incarceration Status

	Overall Missing N (%)	*Mean*		
		Missing PI	Not Missing PI	
Age (years)	261 (0.2)	14.87	14.80	***
Parental Closeness	241 (0.2)	0.00	-0.15	***
Gender (1 = Female)	0 (0.0)	0.51	0.39	***
Race (1 = Not White)	1465 (1.2)	0.25	0.46	***
Poverty (1 = At least 1 risk)	226 (0.2)	0.30	0.44	***
Family Structure (1 = No bio parents)	996 (0.8)	0.08	0.11	***
Mild Internalizing (1 = Yes)	8089 (6.6)	0.54	0.58	***
Moderate Internalizing (1 = Yes)	8089 (6.6)	0.26	0.27	***
Self Injury (1 = Yes)	7717 (6.3)	0.15	0.18	***
Suicidal Ideation (1 = Yes)	8526 (7.0)	0.18	0.18	
Suicide Attempt (1 = Yes)	7886 (6.5)	0.06	0.09	***
Diagnosis of MEB problem (1 = Yes)	3343 (2.7)	0.12	0.15	***
Treatment for MEB problem (1 = Yes)	3679 (3.0)	0.14	0.15	***

Note: PI = Parental incarceration.

* $p < .05$, ** $p < .01$, *** $p < .001$