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Mediators of the Effect of Parental Incarceration on Adolescent Externalizing Behaviors

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Abstract

Over the past two decades, the number of children with parents in prison has increased substantially. Using structural equation modeling with prospective longitudinal data gathered as part of the ongoing Linking the Interests of Families and Teachers (LIFT) trial, the study tests a theoretical model which examines the direct and indirect relationships of four specific domains (parental incarceration, social advantage, parent mental and physical health, effective parenting) as they relate to youth antisocial behavior in the 5th, 8th, and 10th grades. Across all three grades, the relationship between parental incarceration and youth antisocial behaviors was mediated through a complex set of both direct and indirect pathways involving social advantage, parent health, and effective parenting. The total amount of variation explained by the models for youth externalizing ranged from .60 (in 5th grade) to .21 (in 10th grade). The total effects in all the refined models were small.

Keywords

children; delinquency; discipline; externalizing behavior; incarcerated parents

Since the 1970's, U.S. penal policy has experienced many changes, reflecting shifts in the ways society views and reacts to crime. Contributing, in part, to this transformation are three influences (Pizarro, Stenius, & Pratt, 2006). The first is a shift in philosophy of the role and goals of the correctional system, which swung from one of rehabilitation to one of retribution. Second is the politicization of crime whereby statutes, either from legislation or citizen initiatives, have decreased judicial influence on sentencing. Lastly is the commercialization of prisons, where prisons have become potential business ventures for local economies (Pizarro et al., 2006). With these and other changes has come an unprecedented growth in the number of incarcerated citizens, which has quadrupled over the past 20 years (U.S. Department of Justice, 2004). Currently, the United States incarcerates the highest proportion of its citizens of any country in the world (Walmsley, 2009).

Paralleling the growth in the incarcerated population is the dramatic increase of children with an incarcerated parent. In 2007, roughly 1.7 million minor children (approximately 2.3% of our nation's children) had a parent in State or Federal prison (Glaze & Maruschak, 2008). If children whose parents have been involved in the system but are not currently incarcerated or under supervision are considered, the numbers of children of incarcerated parents may be 6 times greater (Kjellstrand & Eddy, 2010; Johnson, 2008; Reed & Reed, 1997).

Research findings thus far suggest a susceptible group of youth who are at risk for numerous psychosocial problems (Kjellstrand & Eddy, 2010; Murray & Farrington, 2005; Myers, Smarsh, Amlund-Hagen, & Kennon, 1999; Phillips, Burns, Wagner, Kramer, & Robbins, 2002). In a recent meta-analysis of research on children with a history of parental incarceration, children whose parents had been incarcerated were twice as likely to exhibit antisocial behaviors as children without incarcerated parents (Murray, Farrington, Sekol, & Olsen, 2009). With the link between adolescent problem behavior and future adult problem behavior, especially criminology, it is important to understand the etiology of this behavior if we want to prevent intergenerational cycles of antisocial behavior and criminology.

Using structural equation modeling, this study examines a theoretical model (see Figure 1) which focuses on four specific domains as they relate to child adjustment over time: (a) parent incarceration during the first 10 years of a child's life, (b) social advantage, (c) parent health, and (d) effective parenting. Each domain has been found to be an important predictor of a child's development. The study focuses on two specific measures of youth adjustment: externalizing behaviors during 5th, 8th, and 10th grades, and serious delinquency in the 10th grade. Using prospective, longitudinal, population-based data, the model examines both the direct relationship between parental incarceration and youth adjustment, as well as the possible mediating roles of social advantage, parent health, and parenting quality.

Research has found that the ways parental incarceration affect children are complex and varied. To begin with, the incarceration of a parent is often not the start of problems for a child and family, but rather a continuation of an already difficult family situation, characterized by poverty, social disadvantage, unstable home life, substance abuse difficulties, mental health problems, abuse, trauma, and community violence (Johnston, 1995; Kjellstrand & Eddy, 2010; Myers et al., 1999; Poehlmann, 2005; Travis & Waul, 2003). This combination of difficulties can increase a child's likelihood of developing a variety of problems including substance abuse, delinquency, violence, and other antisocial behavior (Dallaire, 2007; Farrington, Jolliffe, Loeber, Stouthamer-Loeber, & Kalb, 2001; Poehlmann, 2005).

Because of multiple co-occurring risks, it is unclear if parental incarceration is a risk marker (a spurious indicator of other risks within the family), an additional risk factor over and beyond the other risks the children and their families are experiencing, or a risk mechanism (a situation that leads to additional risk factors such as financial strain, emotional stress, social stigma, and parenting stress). Whereas several studies have documented risk factors to which children of incarcerated parents are exposed, research is just beginning to explore to what extent parental incarceration directly contributes to poor outcomes for children and to what extent these problems are caused by other associated challenges experienced by the family. To date, several studies have found that parental incarceration is associated with poor youth outcomes, and that this increased risk is present even when controlling for other established parenting and family risks (Huebner & Gustafson, 2007; Murray et al., 2009; Phillips et al., 2002). However, these findings are not consistent across all studies or for all ages of the children (Kinner, Alati, Najman, & Williams, 2007; Murray & Farrington, 2005). Results from these latter studies suggest that the broader psychosocial risks in families (such as poverty, poor parental mental health, and poor parenting or family functioning) rather than specifically parental incarceration account for the subsequent behavioral problems for children whose parents have been incarcerated. In research with the general populations of youth, these same risks have been shown to contribute to poor child adjustment, specifically, externalizing behaviors (Ackerman, Brown, & Izard, 2004; Grant et al., 2003; Jones, Forehand, Brody, & Armistead, 2002; Palusci, Crum, Bliss, & Bavolek, 2008, Votruba-Drzal, 2006).

A separate, but related field of developmental research has found that a stimulating, safe, and responsive family environment in which effective parenting strategies are used can not only cultivate a child's cognitive and language development, but can also increase a child's emotional and behavioral health during a stressful period (Eddy & Chamberlain, 2000; Knutson, DeGarmo, & Reid, 2004; Martinez & Forgatch, 2002; Reid & Patterson, 1989). Initial research on children of incarcerated parents is finding similar protective roles in the family environment and parenting (Hanlon, O'Grady, Bennett-Sears, & Callaman, 2005; Mackintosh, Myers, & Kennon, 2006; Poehlmann, 2005). The Social Interaction Learning Theory (Patterson, DeBaryshe, & Ramsey, 1989) suggests that across childhood, risks affect child adjustment to the degree that they have an effect on parenting and family functioning. Later in adolescent development, additional groups, such as peers and significant adults, can influence a youth's development in addition to the monitoring and supervision a youth receives from parents. Because of these roles in moderating and mediating risks, the quality of the parenting and the family environment is important to consider when examining eventual child adjustment.

The current study is one of the first to propose a possible model of how these constructs might be linked. It hypothesizes that youth who have experienced parental incarceration during childhood will be more likely to have higher levels of antisocial behaviors and further that this relationship is mediated by their parents' social advantage and overall health, as well as the quality of parenting the children receive.

Methods

To test the hypothesized model, data from the longitudinal Linking Interests of Families and Teachers (LIFT) study were used (Reid, Eddy, Fetrow, & Stoolmiller, 1999; Eddy, Reid, Stoolmiller, & Fetrow, 2003). LIFT, an ongoing randomized school-based preventive intervention trial, began in 1991 and focused on neighborhoods with high rates of juvenile delinquency in the Eugene-Springfield metropolitan area of Oregon.

Participants

The trial recruited first and fifth graders and their families from 12 local elementary schools to participate in the study. Children and families in the study reflected the local demographics which consisted of residents who were primarily Caucasian and from lower to middle classes (for more information, see Reid et al., 1999). Participating families ($N = 655$) for the current study included all the original LIFT participants who were involved in the study during the 5th grade. Roughly half of the participating youth were females ($n = 334$) and half were males ($n = 321$). Based on an earlier analysis completed on the LIFT sample (Eddy, 2003), the missing data appeared to be missing at random (MAR). For this study, full information maximum likelihood (FIML) as estimated in AMOS version 7.0, was used in the analyses to account for the missing data, with analyses performed on the complete sample of 655 participants.

Measures and Constructs

Parental incarceration—Parental incarceration was an observed (directly measured) variable based on information from two sources of data: information from official records from the city, county, and state correctional department, and youth reports of their parents past criminality from the most recent wave (wave 15) when the youth participants ranged in age from 20 to 25 years old. The dichotomous variable indicated if a parent had been incarcerated for at least one day at any time during the first ten years of a child's life. This specific conceptualization of parental incarceration was chosen to map on to the work of Murray and Farrington (2005); one of the few studies which has used population-based data

(similar to this study) to analyze the development of youth who have experienced parental incarceration. In this sample, 67 out of 655 (10.2%) of all the youth in the study region had at least one parent incarcerated during their childhood; fourteen of the adolescents had only a mother who had been incarcerated, forty-six had only a father who had been incarcerated, and seven had both a mother and a father who had been incarcerated.

Social advantage—Social advantage was a latent construct composed of three indicators: family household income, total number of hours worked by parents in the household, and parental socioeconomic status (SES). Each indicator was gathered through self-reported data from the Parent Major Interviews (Oregon Social Learning Center, 1990) and assessed when the youth were in 5th grade. Family household income included 10 categories and ranged from 1 (less than \$5,000) to 10 (\$60,000 or more). The total number of hours worked was a sum of both parents' hours. Hollingshead's (1975) Four Factor Index of Social Status was used to calculate each parent's SES based on the individual parent's education and occupational level. The final indicator, Parental SES, was a mean of the parent's individual SES.

Parent health—Parent health was a latent construct composed of two dimensions of overall health: depression and physical health of the parents. Each parent's level of depression was assessed using the Center for Epidemiological Studies Depression Scale (CES-D scale). The CES-D scale (Radloff, 1977) is a self-reported, 20-item measure, which focuses on feelings and symptoms of depression (e.g. respondents were bothered by things, felt like life was a failure). Cronbach's alphas for this scale ranged from .80 to .91 across cohorts. The Physical Health Inventory (Oregon Social Learning Center, 1990) was used to assess each parent's physical health. Parents were asked to rate their current state of health (1 = "excellent" to 4 = "poor"). These physical health scores were then reverse coded so that high scores indicated better physical health.

Effective parenting—Effective parenting was a latent construct that included six dimensions of parenting including: (a) monitoring, (b) involvement, (c) quality of parent/child relationship, (d) praise, (e) inappropriate discipline, and (f) inconsistent discipline (with these latter two elements loading negatively onto the final construct). These indicators of effective parenting were obtained from the Parent Major Interview (Oregon Social Learning Center, 1990), the House Rules Questionnaire (French & Weih, 1990), and the Family Activity List (Oregon Social Learning Center, 1990). Mothers and fathers were interviewed separately on different parenting strategies. The separate scores were averaged to arrive at the final indicator of each construct. What follows are explanations of each parenting indicator.

Monitoring was assessed by using the House Rules Questionnaire (French & Weih, 1990). The summative score was based on parents' responses to six 5-point Likert scaled items (1 = "always true" to 5 = "always false") reflecting different dimensions of monitoring (e.g. "a child can go out of the neighborhood without asking", "the parent talks with the friends' parents before the child spends the night"). The scores, which ranged from 6 to 30, were reversed coded so that higher scores reflected higher monitoring. Since the monitoring score was a sum of items that are not necessarily correlated with one another, Cronbach's alphas were not calculated.

Involvement was assessed using two instruments: the Parent Major Interview (Oregon Social Learning Center, 1990) and the Family Activity List (Oregon Social Learning Center, 1990). In the Parent Major Interview, parents were asked to respond to four questions that measured how often the parents talked or spent time with their child. Two of the questions consisted of 5-point Likert scaled items (1 = "never", to 5 = "every day") while in the other

two instruments, parents estimated the amount of time per week they interacted with their child. For these last two questions, the hours were capped at 40 hours per week, and then divided by 10. This scaled down the item to the 1 – 4 range so that these items would be more in line with the 1 – 5 scale of the other items. The final parent score was the mean response from all the questions. Cronbach's alphas were adequate, ranging from .60 to .71 across cohorts. The Family Activity List consisted of a series of positive parent-child activities (e.g. read a book, talked for 10 minutes about child's activities, went for a walk together). The parents indicated whether they had done this activity with their child (e.g., "yes" or "no"). A parent's score was the total number of activities in which the parent participated, divided by 10 (to scale down items). Because the final score was a sum of items that are not expected to correlate with one another, Cronbach's alphas were not calculated. However, scores from the Family activity and Parent Major Interview correlated strongly ($r = .40 - .44$ across waves). The final "involvement" score was a mean of scores from the Parent Major Interview and the Family Activity List.

The quality of the parent/child relationship was assessed through the Parent Major Interview (Oregon Social Learning Center, 1990). It was based on two 5-point Likert scaled questions focusing on how well the parent got along with the child (from 1 = "not well", to 5 = "very well") and how enjoyable were the activities with the child (1 = "not enjoyable", to 5 = "very enjoyable"). The final score was a mean response from the two questions. Cronbach's alphas were adequate, ranging from .58 to .64 across cohorts.

Praise was measured through the Parent Major Interview (Oregon Social Learning Center, 1990). Parents were asked to rate how often they praised their child for doing a good job (1 = "never, almost never" to 4 = "often").

Inappropriate discipline was assessed through the Parent Major Interview (Oregon Social Learning Center, 1990). The summative score was based on the number of inappropriate discipline techniques (e.g. "yell", "slap", "spank") parents mentioned when answering series of questions that began "what would you do if...". The scenarios included such behaviors as: the child argued or talked back to a parent, hit another child, or stole something from a store. For each scenario, parents could identify two possible discipline techniques they might use. A lower score indicated that families used discipline that was more appropriate. Cronbach's alphas were not calculated because the score was a sum of items that were not necessarily correlated with one another.

Inconsistent discipline was assessed using the Parent Major Interview (Oregon Social Learning Center, 1990). The scale is an 11-item measure that uses Likert scale (1 = "never", to 5 = "always") in which parents reported their use of different discipline behaviors. The items included questions such as "How often does child get away with things you feel the child should have been punished for?"; "If you have asked the child to do something, how often do you give up trying to get him/her to do it". A few of the items were reverse coded to maintain consistent scale direction across the set of items. The final score was a mean response of the scenarios. Higher numbers reflected more inconsistent discipline. The Cronbach's alphas ranged from .71 to .79 across cohorts.

Child Outcomes—The study focused on two child outcomes: child externalizing (assessed in the 5th, 8th, and 10th grades) and serious youth delinquency (assessed in the 10th grade). Child externalizing behavior was a latent construct based on mother, father, and teachers reported data derived from aggressive behavior and delinquent behavior subscales of the Child Behavior Checklist (Achenbach, 1991). In the subscales, parents and teachers are asked to rate the child on 30 behaviors (e.g. if the child argues a lot, destroys things, physically attacks people, lies or cheats, steals, or uses alcohol or drugs) using a 3-point

scale (0 = “not true”, 1 = “somewhat/sometimes true”, 2 = “very or often true”). Cronbach’s alphas ranged from .89 to .96 across the different cohorts.

Serious youth delinquency in the 10th grade was based on self-reported data where youth estimated how often (0 = “not at all” to 5 = “over 15 times the past year”) they participated in 11 serious delinquent acts as identified in the major offense subscale of the Elliott Delinquency Scale (Elliott, 1983). The final score was a sum of the responses to these items. Cronbach’s alphas ranged from .67 to .68 across cohorts.

Control variable—Because the original LIFT investigation involved an intervention, intervention group membership was controlled for any potential outcome bias when evaluating each structural equation model.

Analytic Strategy

The study used structural equation modeling (SEM) with AMOS (version 7.0) to model the relationships between the latent constructs of the domains of interest. In each model, both the measurement and structural parts of the model were analyzed. To assess the measurement model, several different fit indices were used including: the model chi-square (χ^2), the normed chi-square (χ^2 :df), Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). By using different indices, several features of the model could be reviewed ensuring that the fit is not just based on a few aspects.

Each conceptual model was tested in multiple stages. First, all indicator variables for the predictor variables were centered around the mean (within the respective cohort) to control for cohort effects within the models. Correlation models were then developed to examine the correlations between the latent constructs during the children’s 5th, 8th, and 10th grade. During this stage, the measurement part of the model in 5th grade was tested for significance. This measurement model was refined and then used for all the analyses.

After the refinement of the measurement model, a complete model with direct and indirect paths between the constructs of interest was tested. For each grade level, this full model was assessed and refined to a more parsimonious model by removing paths that were not significant and testing the impact of this change through the chi-square difference test as well as through the examination of the other fit indices. The significance of the mediations in the refine model were then tested using the Sobel test (Baron & Kenny, 1986; Sobel, 1982). Finally, as a last step, the indirect effects of parental incarceration on child antisocial behavior (the product of the direct effects) and the total effects of parental incarceration on child antisocial behavior (the sum of all the direct and indirect effects) were calculated (Kline, 2005).

Results

The measurement model fit the data well ($\chi^2 = 182.85$ (82), $p < .001$, χ^2 :df = 2.23, CFI = .94, RMSEA = .04) and was therefore used across the models. The correlation models of all the constructs of interest revealed many significant associations (see Table 1) and provided an initial affirmation of the hypothesized models. While there were no significant associations between the original LIFT intervention and any of the other variables, the study condition was maintained in subsequent analyses to control for any potential biases in evaluating the model.

Following these preliminary assessments, the hypothesized models were examined. While in this first stage of model development, the models fit relatively well, several paths were not significant. By removing the paths, which were not significant in a stepwise approach, each

model was refined to a more parsimonious model of the constructs. All the refined models were improvements to the full models without a decrease in fit.

In models examining youth externalizing behaviors, the refined models confirmed many associations found in earlier studies as well as the specific paths hypothesized in this study (see Table 2). Across all three grades, the relationship between parental incarceration and child externalizing behaviors was mediated through a complex set of both direct and indirect pathways involving social advantage, parent health, and effective parenting, however, while the refined models in 5th and 8th grade had similar paths, the refined model in 10th grade differed. In the 5th grade model ($\chi^2 = 193.68$ (91), $p < .001$, $\chi^2:df = 2.13$, CFI = .94, RMSEA = .04) and 8th grade model ($\chi^2 = 205.54$ (91), $p < .001$, $\chi^2:df = 2.26$, CFI = .94, RMSEA = .04), parental incarceration significantly predicted a decrease in social advantage. A decrease in social advantage significantly predicted a decrease in parent health. A decrease in parental health significantly predicted an increase in child externalizing behaviors directly and indirectly through effective parenting. Finally, a decrease in effective parenting significantly predicted an increase in child externalizing behaviors. There were two notable differences in the 10th grade model ($\chi^2 = 196.46$ (91), $p < .001$, $\chi^2:df = 2.16$, CFI = .93, RMSEA = .04). First, parental incarceration significantly and directly predicted an increase in child externalizing behaviors, and, second, the direct effect between parental health and child externalizing was no longer statistically significant. The other direct and indirect effects were similar to the 5th and 8th grade models. Other marked differences between each of the models were the strength of the relationship between constructs and the amount of variance explained by the models at the different ages. In the 5th grade model, the relationships between constructs were the strongest, and the amount of variance explained by the model was the largest (see Table 2). The relationships between youth externalizing and the constructs of interest lessened over time as did the amount of variance explained by the model.

The Sobel test (Baron & Kenny, 1986; Sobel, 1982) revealed that all the indirect relationships across models were true mediating relationships (see Table 3). The final standardized total effects range from .05 to .17. The results in the 5th and 8th grades, suggest that parental incarceration is related to child externalizing behaviors to the degree that it is related to social advantage, parent health, and effective parenting methods. In the 10th grade, these constructs partially mediated the relationship between parental incarceration and youth externalizing. All of the total effects across all three grades are small (see Table 3) and were not as large as the direct effects found in Murray and Farrington's study (2005) of sons of incarcerated parents.

In terms of serious youth delinquency, the model also fit relatively well, however, once again several paths were not significant. The model was refined to a more parsimonious model of the constructs without a decrease in fit ($\chi^2 = 148.31$ (67), $p < .001$, $\chi^2:df = 2.21$, CFI = .93, RMSEA = .04). As found in the youth externalizing models, parental incarceration significantly predicted a decrease in social advantage (see Table 2). A decrease in social advantage significantly predicted a decrease in parental health. A decrease in parental health significantly predicted a decrease in effective parenting. Finally, a decrease in effective parenting significantly predicted an increase in delinquency. The Sobel test (Baron & Kenny, 1986) revealed that all the mediating relationships were significant (see Table 3). The total effect of parental incarceration on youth delinquency mediated by social advantage, parent health, and effective parenting was equal to .02. The results suggest that parental incarceration predicts youth delinquency to the degree that it predicts social advantage, parent health, and effective parenting methods, however, this final refined model explained a small amount (8%) of the variance in serious youth delinquency in the tenth grade.

Discussion

The connections between inadequate financial resources, social disadvantage, parental depression, ineffective parenting and eventual poor outcomes for children have been well documented in research on the general population (Grant et al., 2003; Jones et al., 2002, Patterson et al., 1989; Simons, Johnson, Conger, & Lorens, 1997). The findings in this study suggest that these are important predictors, and possible mediators, of future antisocial behavior for youth whose parents were incarcerated during the youth's childhood. While numerous studies have examined the social and family difficulties faced by youth in families with a history of parental incarceration, the current study is one of the first to propose a theoretical model for how these constructs might be linked. By understanding how these variables are related, we can develop interventions that more effectively target specific risk factors and processes while simultaneously enhancing supports so that children might develop to their full capabilities.

The tested model highlights the link between parental incarceration during childhood and eventual adolescent antisocial behavior; however, how parental incarceration is related to youth outcomes, when taking into account parenting strategies and family risk factors, seems to vary depending on the age of the youth. When children were in 5th and 8th grade, the relationship between parental incarceration and youth antisocial behaviors was fully mediated by social advantage, parental health, and effective parenting. Parental incarceration did not have a direct effect on youth externalizing, but was related to youth externalizing to the degree that it was related to social advantage, parental health, and effective parenting. These results support the findings of Kinner et al. (2007) and Murray and Farrington's (2005) who examined outcomes for younger adolescents (14 years old). Both of these studies revealed that when controlling for other risk factors, the relationship between parental incarceration and youth behavioral outcomes was not significant for these younger adolescents. Rather, the broader associated psychosocial risks accounted for subsequent poor youth functioning. While these two earlier studies explored whether parental incarceration was a risk factor over and beyond other associates risk, the current study proposes potential ways that these family and parenting risks might be mediating the relationship between parental incarceration and child outcomes. However, since causal inferences cannot be made due to the timing of the assessment of the variables in this study, it is still unclear whether parental incarceration is simply a risk marker of overall family disadvantage or part of a risk mechanism whereby parental incarceration leads to an increasing amount of family risk and subsequent poor outcomes for the youth. The literature would argue it is a little of both (see Kjellstrand & Eddy, 2010). To understand the specific role and processes through which parental incarceration affects child development, a more thorough examination is needed; specifically one that focuses on how social advantage, parental health, parenting, and youth behavior change and interact with one another over time, especially prior to, during and after parental incarceration.

While in the 5th and 8th grades, the relationship between parental incarceration and child externalizing behaviors was fully mediated by social advantage, parental health, and parenting, this relationship was only partially mediated when the youth were in the 10th grade. At this older age, parental incarceration was directly related to youth externalizing behavior. While this finding differs from the fore mentioned studies, several other studies have found these similar, seemingly contradictory, findings (Huebner & Gustafson, 2007; Murray & Farrington, 2005; Pakiz, Reinherz, & Giaconia, 1997; Phillips et al., 2002). However, a closer look at these studies reveals an interesting pattern. In each, youth were either over 17 years old (Huebner & Gustafson, 2007; Murray & Farrington, 2005; Pakiz et al., 1997) or included older adolescents as participants (Phillips et al., 2002). While more research is needed to confirm the patterns that seem to be emerging across studies, the

combined results suggest that family and parenting influences play an important role when considering the relationship between parental incarceration and child outcomes, and further, that this role is especially important when the children are younger. As the children approach their later adolescent years, however, family and parenting influences appears to diminish. This could be due in part to the lapse in time between when the family and parenting influences and youth outcomes were measured, however, this might also suggest a decreasing influence of family and parenting protective factors (as suggested in the Social Interaction Learning Theory) or a developmental process whereby earlier childhood stresses or traumatic events become more symptomatic during later adolescence. More research is needed to examine this as such information could be helpful in designing age specific interventions for children with incarcerated parents.

Overall, the model underscores the important predictive and potentially protective roles that social advantage, parent health, and effective parenting can play in the development of youth. The tested models provide support to the idea that the risk and protective factors do not operate in isolation but are interconnected in a complex manner. While parental incarceration in childhood is related to higher adolescent externalizing behaviors and youth delinquency, youth antisocial behavior is not inevitable. Many children with incarcerated parents lead healthy and positive lives. Developmental outcomes for children are influenced by a wide array of factors including parenting and family factors, as shown in this study. By understanding how different risk and protective factors are connected to one another, we can begin to identify key areas to target through practice and policy to improve outcomes for youth of all ages. The persistent link between parental incarceration and higher levels of externalizing and delinquent behaviors provides incentive to address this issue early and more comprehensively to prevent ongoing problems for the children, their families, and our communities.

While the current study offers additional information to our increasing knowledge of children with incarcerated parents, there are three major limitations. First, the children and families in the sample were mostly Caucasian and lived within a moderately sized urban area in the Pacific Northwest. To what degree the findings may be relevant to other populations is unclear. Secondly, the study used a simple indicator of parental incarceration: a parent incarcerated at least one day sometime during the first 10 years of a child's life. The variable certainly is an indication of parental imprisonment; however, it does not capture the full complexity of any incarceration experience. Lastly, even though the study was longitudinal in nature and the predictor variables preceded the outcome variables, all of the indicators for three of the key constructs were measured at one point in time. This limits the ability to make causal inferences from the data around the associations between these constructs.

Despite these limitations, the study offers valuable information by not only drawing attention to the challenges faced by youth with a history of parental incarceration, but also proposing a model of how parental incarceration and its associated risks might be related to youth adjustment. The findings underscore the important predictive and potentially protective relationships that family's social advantage, parent health, and effective parenting skills can have in terms of youth antisocial behavior. Understanding these risk and protective processes is an important step in developing effective and comprehensive programs and policies that not only address needs but also explicitly target key risk and protective processes that diminish or enhance healthy outcomes for children with a history of parental incarceration.

While more research is needed that takes into consideration child, parent and family disadvantage prior, during, and after parental incarceration, increasing evidence suggests not

only the complexity of the situation (see Eddy & Poehlmann, 2010), but also the clear need for a thorough, multi-system policy and practice approach that focuses on the multiple parenting and family challenges faced by children with a history of parental incarceration (e.g., Eddy, Kjellstrand, Martinez, & Newton, 2010). These strategies should consider issues faced by youth, which under the past few administrations have been addressed primarily through major funding initiatives for youth mentoring, but also elements related to family social advantage (including education, housing, and employment), parent health (including substance abuse), and parenting strategies. Current incarceration policies were developed largely within a punishment-only model. While this may be a key part of crime control and prevention, findings from studies such as this one suggest that it is time to reconsider policies within the broader context of children, families, and communities. Rehabilitation and primary prevention also can play a role in decreasing crime, both now and in subsequent generations. More efforts in these areas seem like the best hope to begin to buffer the unintended consequences on children and families of mass imprisonment (Wildman, 2010).

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Figure 1.
Mediation Model of Latent Constructs

Table 1

Parameter Estimates of Correlations of Latent Constructs for Externalizing Behaviors and Youth Delinquency (n = 657)

Variables	1	2	3	4	5
5th Grade Externalizing					
1. Externalizing	1				
2. Parent Incarceration	.12*	1			
3. Effective Parenting	-.72***	-.11*	1		
4. Parent Health	-.55***	-.16**	.47***	1	
5. Social Advantage	-.31***	-.20***	.28***	.45***	1
6. Intervention	-.05	-.01	-.03	.08	.06
8th Grade Externalizing					
1. Externalizing	1				
2. Parent Incarceration	.15**	1			
3. Effective Parenting	-.54***	-.11*	1		
4. Parent Health	-.44***	-.16**	.45***	1	
5. Social Advantage	-.30***	-.19***	.27***	.46***	1
6. Intervention	-.05	-.01	-.04	.08	.06
10th Grade Externalizing					
1. Externalizing	1				
2. Parent Incarceration	.19***	1			
3. Effective Parenting	-.40***	-.12*	1		
4. Parent Health	-.34***	-.16**	.49***	1	
5. Social Advantage	-.20***	-.20***	.30***	.46***	1
6. Intervention	.01	-.01	-.03	.08	.07
10th Grade Delinquency					
1. Delinquency	1				
2. Parent Incarceration	.11**	1			
3. Effective Parenting	-.23***	-.12*	1		

Variables	1	2	3	4	5
4. Parent Health	-.21 ***	-.16 **	.53 ***	1	
5. Social Advantage	-.16 ***	-.19 ***	.30 ***	.45 ***	1
6. Intervention	-.09 *	-.01	-.02	.08	.06

Note.

* $p < .05$,

** $p < .01$,

*** $p < .001$.

Data are from Linking Interests of Families and Teachers (LIFT) project (Eddy et al., 2003).

Table 2

Parameter Estimates for Final Mediation Models of the Effect of Parental Incarceration on Child Externalizing Behaviors and Youth Delinquency

Outcome	Predictors	<i>B</i>	β	<i>R</i> ²
Externalizing 5th grade				.60
	Parent Incarceration → Social Advantage	-11.34	-.20***	
	Social Advantage → Parent Health	0.01	.49***	
	Parent Health → Parenting	0.76	.50***	
	Parent Health → Externalizing	-4.15	-.26***	
	Parenting → Externalizing	-6.46	-.61***	
	Intervention → Externalizing	-0.59	-.05	
Externalizing 8th grade				.37
	Parent Incarceration → Social Advantage	-11.34	-.20***	
	Social Advantage → Parent Health	0.01	.51***	
	Parent Health → Parenting	0.67	.49***	
	Parent Health → Externalizing	-4.63	-.26***	
	Parenting → Externalizing	-5.53	-.43**	
	Intervention → Externalizing	-0.63	-.05	
Externalizing 10th grade				.21
	Parent Incarceration → Social Advantage	-11.36	-.20***	
	Social Advantage → Parent Health	0.01	.49***	
	Parent Health → Parenting	1.02	.58***	
	Parent Incarceration → Externalizing	3.06	.15**	
	Parenting → Externalizing	-4.28	-.42***	
	Intervention → Externalizing	0.08	.01	
Delinquency 10th Grade				.08
	Parent Incarceration → Social Advantage	-11.27	-.20***	
	Social Advantage → Parent Health	0.01	.48***	
	Parent Health → Parenting	1.09	.59***	
	Parenting → Delinquency	-0.38	-.26***	
	Intervention → Delinquency	-0.18	-.10*	

Note.

* $p < .05$,

** $p < .01$,

*** $p < .001$.

Data is from Linking Interests of Families and Teachers (LIFT) project (Eddy et al., 2003).

Table 3

Sobel Tests for Final Mediations in Models of the Effect of Parental Incarceration on Child Externalizing Behaviors and Youth Delinquency

Outcome	Indirect Effect	<i>z</i>	Total Effect
Externalizing 5th grade			.06
	Parent Incarceration → Social Advantage → Parent Health	−3.76***	
	Social Advantage → Parent Health → Parenting	3.88***	
	Social Advantage → Parent Health → Externalizing	−3.07**	
	Parent Health → Parenting → Externalizing	−3.19***	
Externalizing 8th grade			.05
	Parent Incarceration → Social Advantage → Parent Health	−3.79***	
	Social Advantage → Parent Health → Parenting	3.46***	
	Social Advantage → Parent Health → Externalizing	−3.23***	
	Parent Health → Parenting → Externalizing	−2.77**	
Externalizing 10th grade			.17
	Parent Incarceration → Social Advantage → Parent Health	−3.17***	
	Social Advantage → Parent Health → Parenting	3.37***	
	Parent Health → Parenting → Externalizing	−3.39***	
	Parent Incarceration → Externalizing (direct relationship)		
Delinquency 10th Grade			.02
	Parent Incarceration → Social Advantage → Parent Health	−3.17**	
	Social Advantage → Parent Health → Parenting	3.37***	
	Parent Health → Parenting → Externalizing	−3.01**	

Note.

* $p < .05$,

** $p < .01$,

*** $p < .001$.

Data is from Linking Interests of Families and Teachers (LIFT) project (Eddy et al., 2003).