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The effects of parental school exclusion on offspring drug use: An intergenerational path analysis

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ABSTRACT

Purpose: To determine whether and how exclusionary school punishment experienced by parents affects the drug use of their offspring.
Methods: Using panel data of 360 parent-child dyads from the Rochester Youth Developmental Study and its intergenerational component, the Rochester Intergenerational Study, we conduct path analysis to evaluate the adequacy of a theoretical model that explicates the intergenerational pathways from parental school exclusion to offspring drug use.
Results: Parents who were suspended or expelled during adolescence are more likely to drop out of school, which, in turn, leads to parental adult drug use, economic hardship, and ineffective parenting of their children. As a result, their offspring are likely to hold attitudes/beliefs favoring drug use and have reduced bonding to school, which, ultimately, contribute to offspring drug use.
Conclusions: Exclusionary school disciplinary practices not only result in a number of adverse collateral consequences within one generation of respondents, the negative effects of such experiences are also felt by the next generation. Therefore, exclusionary school punishment should only be used as a last resort. Whenever possible, disciplinary practices in school need to involve inclusionary efforts to re-integrate students into the larger school community.

1. Introduction

Exclusionary disciplinary practices are rather a commonplace occurrence in our schools today. Estimates suggest that one in nine (or over 2 million secondary school children a year) are suspended or expelled (Losen & Martinez, 2013) and that over half of all children will receive exclusionary school discipline sometime during their school experience (Fabelo et al., 2011). Hirschfield (2008) attributes the increased use of school exclusion to the perceived need to crack down on problematic behaviors such as school shootings, drug sales and use, and bullying. Zero-tolerance policies mandated by the Gun-Free Schools Act of 1994 and the introduction of federal funds for school resource officers (SROs) have, in Hirschfield's words, led to a “criminalization” of school discipline.

These policies, while intended to increase the safety of other students, have had deleterious collateral consequences for those who are suspended or expelled (Mauer & Chesney-Lind, 2002; Perry & Morris, 2014). The collateral consequence that has received the most attention is the increased risk that those excluded are likely to come into contact with the juvenile or criminal justice system and, eventually, be imprisoned (Arum & Beattie, 1999; Fabelo et al., 2011; Monahan, VanDerhei, Bechtold, & Cauffman, 2014; Mowen & Brent, 2016; Na & Gottfredson, 2013; Nicholson-Crotty, Birchmeier, & Valentine, 2009; Shollenberger, 2015; Wolf & Kupchik, 2017). While fewer studies have examined the impact of school exclusionary practices on actual subsequent problematic behaviors such as crime and drug use, those that have found a positive relationship between having been suspended or expelled and subsequent offending or drug use (Dong & Krohn, 2019; Hemphill, Toumbourou, Herrenkohl, McNorris, & Catalano, 2006; Jacobsen, Pace, & Ramirez, 2016; Kaplan & Fukurai, 1992; McCrystal, Percy, & Higgins, 2007; Wolf & Kupchik, 2017).

Hirschfield (2018) suggests that school exclusion may cascade into a number of adverse life-course outcomes much like research on contact with the juvenile justice system has found (Bernburg & Krohn, 2003; Bernburg, Krohn, & Rivera, 2006; Kirk & Sampson, 2013; Lopes et al., 2012; Schmidt, Lopes, Krohn, & Lizotte, 2015; Wiley, Slocum, & Esbensen, 2013). Being suspended or expelled from school affects the educational process in terms of decreasing academic performance

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(Balfanz, Byrnes, & Fox, 2015; Perry & Morris, 2014; Shollenberger, 2015) and eventually dropping out of school (Balfanz et al., 2015; Marshbanks III et al., 2015; Peguero & Bracy, 2015). Dropping out of school consequently affects other life chances such as unemployment and living in poverty (Barton, 2005; Sum et al., 2003). In addition, dropping out of school and its associated life challenges can have an impact on family relationships including the ability of those affected to competently parent their children (Brooks-Gunn & Duncan, 1997; Ettekal, Eiden, Nickersn, Molnar, & Schuetze, 2019; Votruba-Drzal, 2006).

This study extends this line of research by recognizing that the life-course of one generation inevitably affects what happens to the next generation. Therefore, we argue that the result of school exclusion of parents when they were teenagers will have cascading effects that reach beyond their lives to the lives of their children. Specifically, we will examine the impact of school exclusion of parents when they were teenagers on problematic behaviors of their children when both generations were at approximately the same developmental stage. Thornberry (2009) pointed out that studying different generations at roughly the same age or developmental stage has greater potential to fully capture the underlying, cross-generational mechanisms than traditional longitudinal, concurrent research. In addition, we will examine possible mediating mechanisms in the relationship between exclusionary school discipline in one generation on the behavioral consequences for the next generation. We begin by briefly reviewing the research on the impact of school exclusion on problematic behaviors and the life chances within a generation. We then present the conceptual rationale for why we hypothesize that such consequences will inflict negative consequences on the next generation as well.

2. School exclusion on juvenile justice intervention and problematic behavior

Being expelled or suspended from school has been consistently found to be related to a higher probability of being arrested and sent to a correctional institution, in other words, the “school-to-prison pipeline”. (Arum & Beattie, 1999; Fabelo et al., 2011; Hirschfield, 2008; Hirschfield & Celinska, 2011; Mowen & Brent, 2016; Na & Gottfredson, 2013; Nicholson-Crotty et al., 2009; Shollenberger, 2015). Recent studies, using data of high temporal resolution, have further confirmed the connection. Monahan et al. (2014), using the Pathways to Desistance data, examined this relationship to determine if arrests occurred during the same months in which students were suspended or expelled from school. They found that there was a higher probability that adolescents would be arrested during those months particularly among those who were estimated to be least at risk for delinquent behavior. Cueller and Markowitz (2015) further documented the relationship between school exclusion and arrests by narrowing the connection between the two societal reactions to the day on which students were suspended or expelled.

A smaller amount of research has established the relationship between school exclusion and subsequent problematic behavior. Early research by Kaplan and Fukurai (1992) showed that negative school sanctions in the first year of data collection were indirectly related to drug use in the third year through the mediating variables of self-rejection, disposition to deviance and deviant peer associations. McCrystal et al. (2007) studied a group of 11 and 12 year old students in Belfast finding that students who had been excluded from school had higher rates of drug use and antisocial behavior, lower levels of communication with their parents/guardians, higher levels of contact with the criminal justice system and increased likelihood of living in communities characterized with neighborhood disorganization. Because of their research design, however, they were unable to conclude that school exclusion occurred before the problematic behaviors. Hemphill et al. (2006) examined the impact of both school exclusion and arrests on subsequent delinquent behavior among students in both Washington state and Victoria, Australia. They found that school suspension in year 1 was significantly related to general delinquency in year 2 but arrest was not. Dong and Krohn (2019) also reported that school exclusion had a greater impact on subsequent drug use than did police contact. Interestingly, for males this effect was apparent for long-term drug use in early adulthood, while for females it was significant for concurrent use during adolescence.

Thus, it appears that school exclusion increases both the likelihood of subsequent problematic behavior including drug use as well as resulting in the increased probability that the youth will be arrested and institutionalized. In the next section, we explore other potential collateral consequences of school exclusion.

3. Other collateral consequences of school exclusion

The most immediate impact of school exclusion is the disruption of the in-school learning process. If a student is suspended or expelled from school, he or she will miss work and the likelihood is that it will be difficult to make up the required work. Suspended or expelled students may also experience negative influences from other delinquent peers in an unsupervised community setting, may experience a negative attitude toward school as well as suffer labeling costs from the community (Dong & Krohn, 2019). These can ultimately lead to falling behind in achievement levels, lower grade point averages, and ultimately a lower probability of high school graduation.

Several studies have documented the adverse effect of school exclusion on educational achievement and dropping out of school (Balfanz et al., 2015; Bowditch, 1993; Fabelo et al., 2011; Kinsler, 2013; Noltemeyer, Ward, & Mcloughlin, 2015; Peguero & Bracy, 2015; Perry & Morris, 2014; Raffaele-Mendez, 2003; Skiba, Michael, Nardo, & Peterson, 2002). Two studies used interesting methodological designs to explore the impact of school exclusion on academic growth. Arcia (2006) was able to match a group of suspended and non-suspended students on a set of social characteristics from a large, urban school district. She assembled student achievement data from the district's student database system for 3 academic years, finding that the suspended group gained considerably less academically throughout 3 years than did students in the comparison group. At the end of the follow-up period, suspended students were almost five grades behind classmates with no suspensions. The percentages of students who dropped out also increased substantially with increases in suspension. Perry and Morris (2014) conceptualized exclusionary discipline practices as a manifestation of intensified social controls in schools and documented its negative effects on student achievement. Using a large hierarchical and longitudinal dataset consisting of student and school records, they found that increasing levels of exclusionary discipline over time are inversely related to both students' scores on reading and math. Interestingly, schools with high levels of school exclusion affect the development of non-suspended students more than suspended students.

While we may not observe a direct relationship between school exclusion and subsequent economic hardship in early adulthood (e.g., potential employers do not have access to school records so they cannot learn of suspensions or expulsions), it is likely that there exists an indirect relationship through the lack of school achievement including dropping out of school (Kupchik, 2016). McCaul, Donaldson Jr, Coladarci, and Davis (1992) conducted an early study investigating the experiences of dropouts and high school graduates 4 years after the projected date of graduation. They found that male dropouts experienced more periods of unemployment, and female dropouts experienced less work satisfaction than did graduates. Dropouts were also more likely to be stuck in “dead-end” jobs, having a lower likelihood of receiving training on their current job relative to graduates.

Barton (2005) laid out the steadily declining opportunities for dropouts after they leave school. Only four in ten of 16- to 19-year-old dropouts are employed, as are less than six in ten 20- to 24-year-old dropouts. What is also alarming is that over four in ten of the younger

group are not in the labor force (meaning they are not employed and are not looking for work), while this is true for three in ten 20- to 24-year-olds. In addition, compared to those who are better educated, the employed dropouts are also the most affected by economic slowdowns, the constant change in the structure of the economy, and ever-advancing technology. "Without interventions that will change their course, they are likely to father and mother children ill-equipped to do better, thus perpetuating a down-ward cycle of economic or social failure" (Barton, 2005, p.40).

Moreover, students who drop out of school are likely to receive lower wages and participate more in welfare programs than did graduates. Rouse (2005) estimated that high school dropouts are less likely to be employed, work fewer weeks per year, and make about one-half the earnings of individuals with a high school diploma, but no further schooling. They are also less able to contribute to society; dropouts contribute only 40% of the federal and state income tax revenues of those with a high school diploma. When considering welfare receipt, Waldfogel, Garfinkel, and Kelly (2007) reported that high school graduation is associated with a lower probability of Temporary Assistance for Needy Families (TANF) by 40%, of food stamp use by 19%, and of housing assistance by 1%. A similar conclusion that dropping out of high school is associated with higher receipt of public assistance payments or subsidies was also drawn by Levin (2009) and Heckman, Humphries, and Veramendi (2018). Thus, high school graduation has been a necessary (but not sufficient) pre-requisite for making it financially in contemporary America (Rouse, 2005).

In the next section, we examine how the collateral consequences of exclusionary school disciplinary practices in one generation affects the next generation due to some of the aforementioned pathways.

4. Linked lives: impact of one generation's experience on the next generation

The life-course perspective focuses not only on how one generation traverses domains such as education and labor markets, but it also recognizes how the success or lack thereof, in making transitions and the overall trajectory can impact other people with whom the actor interacts. In particular, the life chances of parents are linked to those of their children (e.g., Bailey, Hill, Oesterle, & Hawkins, 2006; Besemer & Farrington, 2012; Thornberry, 2005; Thornberry, Henry, Krohn, Lizotte, & Nadel, 2018). Elder Jr (1985) summarized this tenet in his statement that "each generation is bound to fateful decisions and events in the other's life-course" (p.40). The recognition of linked lives—how parental experience in educational, and consequently, behavioral, financial, and familial domains can affect a child—form key conceptual rationales for exploring the pathways between a parent's exclusionary school punishment and the drug use of his/her offspring in this study.

Most life-course theories of problematic behavior now incorporate an intergenerational component to explain the continuity (and discontinuity) of such behavior across two or more generations. Farrington (2011), for instance, provided six possible explanations (not mutually exclusive) for intergenerational transmission of criminal behavior (pp.132–134): intergenerational continuities in exposure to multiple risk factors, assortative mating, social learning and co-offending, mediation through environmental risk factors, mediation through genetic mechanisms, and official (police and court) bias against known criminal families. Interactional theory (Thornberry, 2009; Thornberry & Krohn, 2001, 2005) posits that problematic behavior places the parent at a disadvantage to make a successful transition to adult statuses such as completing an education, and obtaining a quality job and financial security. The strain created by not making successful transitions increases the likelihood that there would be tension and potential conflict in the home influencing the quality of parenting afforded to their children. Ineffective parenting combined with structural disadvantage of the family increases the probability that their children will hold delinquent attitudes/beliefs and engage in problematic behavior.

More broadly, these arguments are consistent with Conger's *family stress model* (Conger et al., 2002; Conger & Donnellan, 2007). Dropping out of school and associated life stresses can combine to create tensions in the family, which will have an impact on the ability of parents to effectively raise their children. Specifically, financial difficulties that are partially induced by lack of adequate education or training exacerbate family stresses and impose an adverse effect on parents' emotions (e.g., depression, anxiety, anger, and alienation), behaviors (e.g., substance use), and relationships (e.g., marital conflict and dissolution), which in turn negatively influence their parenting practices (e.g., less affection toward their children and more harshness and inconsistency in discipline). Empirical support for the family stress model is strong across different ethnic or national groups, geographic locations, and research designs (e.g., Costello, Compton, Keeler, & Angold, 2003; Gutman, McLoyd, & Tokoyawa, 2005; Mistry, Vandewater, Huston, & McLoyd, 2002; Yeung, Linver, & Brooks–Gunn, J., 2002). For instance, in a recent study, Ettekal et al. (2019) found a significant association from socioeconomic adversity (an aggregate measure which includes high school completion as an important indicator) to lower parenting sensitivity, warmth and higher parenting harshness among a low-income, high-risk sample. Furthermore, the *family investment model* suggests that parents constrained by unsuccessful transitions to adult life have limited access to financial (e.g., income), social (e.g., occupational status) and human (e.g., education) capital and can hardly invest in child rearing. As a result, children of these parents tend to have lower commitment to conventional values and activities, such as bonding to school, and exhibit more behavioral problems (e.g., Bornstein & Bradley, 2003; Conger & Donnellan, 2007; Duncan, & Brooks-Gunn, J. (Eds.)., 1997; Mayer, 1997).

A substantial body of research has established the link between parental delinquent and drug-using behavior and misbehavior on the part of their children (e.g., Bailey et al., 2013; Capaldi, Pears, Kerr, Owen, & Kim, 2012; Epstein, Hill, Bailey, & Hawkins, 2013; Loughran, Larroulet, & Thornberry, 2018; Thornberry, Freeman-Gallant, Lizotte, Krohn, & Smith, 2003). Several studies have also examined the intervening mechanisms that explain this association, focusing on the effect of delinquent and drug-using behavior and official interventions on life chances such as education, financial well-being and parenting (e.g., Farrington, Jolliffe, Loeber, Stouthamer-Loeber, & Kalb, 2001; Lizotte et al., 2015; Thornberry, Freeman-Gallant, & Lovegrove, 2009a, 2009b). In brief, family stresses and lack of capital/resources impede a positive transmission of conventional values, skills and standards of behaviors across generations. Since the relationship between school exclusion and subsequent problematic behavior and involvement in the juvenile or criminal justice system is well established (see Hirschfield, 2018), one might expect that parents who experience school exclusion in adolescence will be more likely to have children who engage in problematic behaviors such as drug use.

5. Current study

The life-course approach recognizes that the lives of children are inevitably linked to trajectories and transitions that their parents experienced throughout life. Prior research has established that exclusionary school punishment can be an important turning point in a parent's life leading to a number of problematic consequences. Those consequences can, in turn, affect the lives of their children given that limited access to financial, social and human capital can weaken those parents' abilities to raise children. Ineffective parenting combined with structural disadvantage of the family contributes to offspring delinquent attitudes/beliefs and lack of commitment to conventional social institutions and, ultimately, drug use and other problem behaviors.

In effect, Dong and Krohn (2019) have found that school suspension or expulsion has a stronger impact on subsequent problematic behavior than does juvenile justice intervention. They argue that this may be due to a greater degree of labeling effect given that school exclusion is both

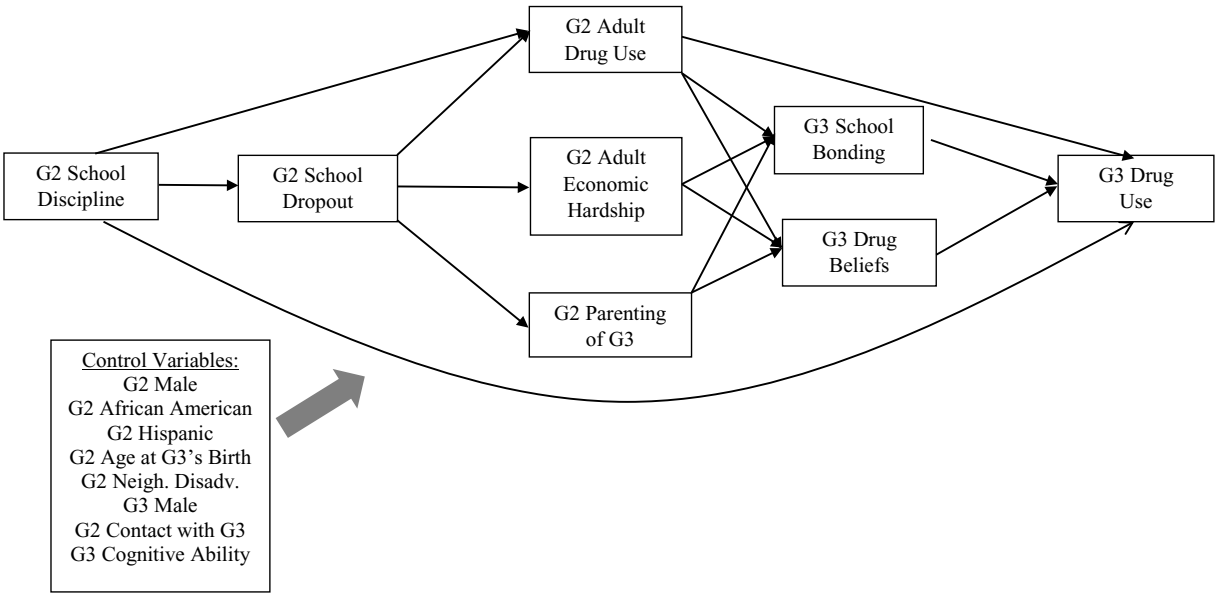

Fig. 1. Theoretical model of G2 school suspension/expulsion on G3 prevalence of drug use.

more likely to become known to others and to have a direct and immediate impact (e.g. through unstructured and unsupervised activities) on the ability to succeed in important transitions such as graduating from high school, acquiring satisfactory employment and establishing financial security. Such consequences may in turn increase the risk of continuing problematic behavior such as drug use.

The current study aims to extend this line of research into an intergenerational framework. Children of parents who use illicit drugs as a result of exclusionary school punishment will be more likely to manifest problematic behavior such as drug use when they become teenagers. In addition, those parents who have dropped out of school may experience greater behavioral (e.g., drug use), financial (e.g., reliance on welfare), and parenting difficulties (e.g., being detached from the child and placing less emphasis on education as a means to success) in adulthood. Such parent-generation disadvantage, unfortunately, compromises the next-generation children's bonding to school (another key conventional social institution besides family) and cultivation of attitudes/beliefs disapproving illicit drug use, which could, in turn, lead to a higher probability of drug use.

Fig. 1 graphically depicts the proposed model. Generation 2 (G2) refers to the parents in our study and Generation 3 (G3) to their children. We hypothesize that G2's school exclusion will increase the probability that they will drop out of school prior to graduation and use drugs in adult years. Dropping out of school will also increase the likelihood of adult drug use, being financially disadvantaged, and practicing ineffective parenting. These life adversities, in turn, will decrease their children's (G3) bonding to school and increase their attitudes/beliefs favoring drug use. We also hypothesize that G2 school exclusion, G2 adult drug use, and G3 lack of school bonding and favorable attitudes/beliefs toward drug use will directly enhance the prevalence of G3 drug use. Hence, we suggest that the impact of exclusionary school punishment will not only have collateral consequences for those directly affected by it but also have consequences for their offspring.

6. Methods

6.1. Data and sample

Data for the current study come from the Rochester Youth Development Study (RYDS), and its intergenerational extension—the Rochester Intergenerational Study (RIGS). The two companion longitudinal studies are designed to investigate the causes and consequences of delinquency and drug use in an urban sample of adolescents, and uncover the causal mechanisms that explain the intergenerational transmission of problem behaviors.

Data collection for the RYDS began in 1988 with an original sample of 1000 seventh- and eighth-grade students (Generation 2 [G2]) in the public schools of Rochester, New York. Given the relatively low base rates for serious delinquency and drug use, we stratified the sample on two dimensions to provide high-risk respondents. First, males were oversampled (75% vs. 25%) because they are more likely than females to engage in problem behaviors. Second, students from high crime neighborhoods were oversampled on the premise that living in such areas of the city represented enhanced risk for delinquency.[1] The sample was predominantly comprised of minorities (68% African American, 17% Hispanic, and 15% White) and males (73%).

A total of 14 waves of data were collected across three phases. Phase 1 covered the adolescent years of the subjects from about 14 to 18 years of age. In Phase 1, the respondents and their primary caretakers (Generation 1[G1]; most often biological mothers) were interviewed nine and eight times respectively at 6-month intervals (Waves 1–9). Phase 2 began after a 2.5-year gap in data collection. The respondents with their primary caregivers were interviewed at three annual intervals at ages 21 to 23 (Waves 10–12). Phase 3 consisted of respondent interviews at 29 and 31 years of age (Waves 13 and 14). In this analysis, we used data from Phase 1 to explore G2 school suspension/expulsion, and Phase 2 about G2 school dropout/non-graduation status. By the end of Phase 2 data collection, the retention rate was 85%. Comparisons of retained and non-retained G2 subjects indicated that there was little selection bias in the loss of subjects (Krohn & Thornberry, 1998).

Beginning in 1999, the RIGS identified the oldest biological child (Generation 3 [G3]) of the original RYDS subjects (G2), and added new firstborns as the child turned 2 in each subsequent year. Both G2 and G3's other primary caregiver completed annual interviews since the inception of the RIGS, and the child completed annual interviews once he or she turned age 8. By Project Year 18 (2016), there were data on

[1] To identify high crime neighborhoods, each census tract in Rochester was assigned a resident arrest rate reflecting the proportion of the total population living in that tract that was arrested by the Rochester police in 1986. Subjects were oversampled proportionate to the rate of offenders living in a tract.

539 parent-child dyads—186 mother-child dyads and 353 father-child dyads, and the children were evenly split by sex. This represents approximately 85% of eligible families, and 87% of the families enrolled in the RIGS are still enrolled today.

The present analysis used data from all G3 adolescents for whom we have self-reported information on drug use between the ages of 14 and 18. This age period was chosen, as it is when adolescents enter high school and begin to experiment with drugs; it also covers the same developmental stage for which we have G2 school suspension/expulsion measure. We included all G3 participants interviewed at ages 14 to 18 regardless of the year in which the interview took place, provided they had valid information for at least four of these five ages (Nadel & Thornberry, 2017). To maintain temporal order, potential mediators were measured when these same G3 participants were aged 12 and 13 (which was also after Phase 2 data collection of the RYDS). The analysis sample consisted of 383 parent-child dyads (i.e., one G2 parent and one G3 child).

6.2. Measures

G3 prevalence of drug use. At ages 14 to 18, G3 subjects were asked if they had used a variety of illicit drugs (including marijuana, cocaine, crack, heroin, inhalants, ecstasy, hallucinogens, tranquilizers, barbiturates, and/or amphetamines) since the date of last interview. We created a dichotomous variable indicating whether G3 respondents used any illicit drug between ages 14 and 18. G3 participants had a score of "1" if they reported any drug use between ages 14 and 18. Otherwise, they obtained a score of "0". We used the prevalence measure because a small but non-negligible proportion of G3 subjects ($\approx$5%) reported using drugs other than marijuana during adolescence. A frequency score may bias the results as G3 adolescents were far more likely to frequently use marijuana than more serious drugs (e.g., cocaine or heroin).[2]

G2 school discipline. Between Waves 2 and 9, G2 subjects who remained in school were asked if they "got suspended or expelled from school since the date of last interview". The question covered any type of suspension and did not differentiate between in-school and out-of-school suspension. Youth could respond either "yes" or "no" for each wave. We counted how many waves a G2 subject was suspended or expelled from school during adolescence.

G2 school dropout/non-graduation. We created this measure assessing whether a respondent had dropped out of school or failed to graduate. If a respondent was not attending high school and had not graduated from high school by Wave 10, he or she received a score of "1"; otherwise, he or she had a score of "0". A student cannot attend high school past 20 years of age in the state of New York (Krohn, Ward, Thornberry, Lizotte, & Chu, 2011).

G2 adult drug/marijuana use. The annual parent interview in the RIGS included G2 self-reports about the frequencies of use for each drug (similar drug use items as in G3 interviews). Preliminary analysis showed that approximately only 1% of G2 subjects reported using drugs other than marijuana at G3 subjects' ages 12 to 13. To better capture the degree of G2 adult use, we created an annual frequency measure of marijuana use.[3] The annual frequency scores were then averaged across the 2 years when G3 respondents were at ages 12 to 13. To reduce skewness, we added 1 to all scores and log-transformed the frequency measure.

G2 adult economic hardship. G2 subjects in the RIGS reported if they participated in any publicly funded income assistance program since the date of last interview. These include public assistance or welfare (e.g., Temporary Assistance for Needy Families), supplementary security income, food stamps, Medicaid, housing assistance, or day care allowance/voucher. They had a score of "1" if they received any assistance at each observation period and "0" otherwise. G2 subjects also reported if they experienced financial difficulties in maintaining daily family life, such as had to cut the size of meals or skip a meal, got behind in the rent or house payments, did not have enough money to pay utility bills, or had the utility service cut off. They had a score of "1" if they experienced any of the difficulties and "0" otherwise. We then added the two scores together and averaged across the 2 years at G3 ages 12 to 13.

G2 effective parenting of G3. Informed by prior intergenerational research (e.g., Thornberry, 2009; Thornberry et al., 2003), effective parenting was measured with three indicators—strong attachment to the child, consistent and non-harsh discipline provided to the child. Specifically, G2's affective ties to G3 were measured by a 10-item scale derived from Hudson's Index of Parental Attitudes (Hudson, 1996). Responses for each item were indicated on a 5-point scale and items were averaged to provide a mean score. The annual scores were then averaged across G3 ages 12 to 13. A 4-item scale was used to measure G2's consistency in disciplining G3, and a 10-item scale to measure G2's non-harsh discipline of G3. Responses were also indicated on a 5-point scale and items were averaged to provide a mean score. The annual scores were then averaged across G3 ages 12 to 13. To create the composite score, we averaged across the three sub-scales and higher scores indicate greater levels of effective parenting (see Appendix B for the specific items included in the sub-scales and their psychometric properties).

G3 school bonding. Two indicators were used to measure G3's bonding to school. We used a 9-item scale to assess G3's commitment to school. They were asked to rate, for instance, "you try hard at school", "you usually finish your homework", "getting good grades is very important to you", "school is boring to you (reverse coded)", or "you don't really belong at school (reverse coded)". Responses were indicated on a 4-point scale from "strongly disagree" (1), "disagree" (2), "agree" (3) to "strongly agree" (4). Items were averaged to provide a mean score and higher scores indicated greater commitment to school. The annual scores were then averaged across G3 ages 12 to 13. Similarly, a 6-item scale was used to measure G3's attachment to teacher. G3 rated, for instance, how likely they would "go to one of your teachers if you needed advice", "feel close to at least one of your teachers", or "have lots of respect for your teachers". Responses were averaged to provide a mean score and the annual scores were then averaged across G3 ages 12 to 13. To create the composite score, we calculated a mean score of the two indicators and higher scores indicate greater levels of G3 bonding to school (see Appendix C).

G3 drug beliefs. G3's attitudes toward drug use were measured by two questions. They were asked to rate how wrong it is to "use hard drugs such as crack, heroin, cocaine, LSD or acid?" and "use marijuana, weed, or reefer"? Responses were indicated on a 4-point scale from "very wrong" (1), "wrong" (2), "a little bit wrong" (3) to "not wrong at all" (4). The two items were averaged to provide a mean score and higher scores indicated greater drug use favoring attitudes/beliefs. The annual scores were then averaged across G3 ages 12 to 13.

Control variables. We created dichotomous indicators for *G2 male*, *G3 male*, *G2 African American* and *G2 Hispanic* race/ethnicity (reference group is white). *G2 neighborhood disadvantage* was measured by a factor score based on 4 items in the 1990 U.S. Census—percentage in poverty, percentage female-headed households, percentage unemployed, and percentage receiving public assistance in the census tract. We also controlled for *G2's age at G3's birth* and the average *contact of G2 with G3* at ages 12 to 13 (e.g., ranging from "rarely taking care of the child" to "living with the child"). In addition, we controlled for *G3 cognitive ability* by using standardized scores from the Peabody Picture Vocabulary Test (PPVT-III).[4]

6.3. Analytic plan

To answer our research questions, we employed Mplus (Version 8.2)

[2] In other words, the frequency measure effectively assumes that the use of any of the included drugs should be weighted equally.

[3] As a robustness check, we also examined G2 frequency of all drug use in adulthood. The same substantive findings were observed.

[4] To maintain temporal order, *G3 male*, *G2 contact with G3*, and *G3 cognitive ability* were not included in the path equation predicting *G2 school dropout*.

to conduct the statistical analysis given the software's versatility. Mplus can estimate path models with a mixture of continuous and categorical observed variables. Given that our model contains categorical endogenous variables, robust weighted least-squares estimation is employed.

Data analysis proceeded in two main steps. First, logistic regression was performed to determine if parental (G2) school discipline was directly associated with the prevalence of offspring (G3) drug use.[5] Second, we conducted path analysis to examine our theoretical model of G2 school suspension/expulsion on G3 drug use. The adequacy of model fit was assessed through several indices, including the χ^2 statistic, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the average correlation residuals (SRMR). Models were considered fit when the chi-square test for model fit was not statistically significant, the RMSEA value was found to be less than or equal to 0.06, the CFI was greater than or equal to 0.95, and the SRMR was less than or equal to 0.08 (Hu & Bentler, 1999).

Our model hypothesizes multi-path indirect effects. Following prior empirical research and the results from simulation studies (e.g., Krohn et al., 2011; Leth-Steensen & Gallitto, 2016; Taylor, MacKinnon, & Tein, 2008), we employed the joint significance test to detect significant indirect effects. "The major advantage of the joint significance test is its ease and speed of application. In circumstances where only a test of the null hypothesis of no mediation is of interest, it is an ideal method, as it controlled Type I error at or below its nominal level and had good power" (Taylor et al., 2008, p.260). In the case of a three-path effect, for instance, the null hypothesis of no indirect effect of the joint significance test is rejected only if all three paths are statistically significant individually. Although the joint significance test is recommended in our case, as robustness checks, we also conducted analyses using Mplus' bootstrap function (draws = 5000) and constructed asymmetric bootstrap confidence intervals for indirect effects. The findings on indirect effects were substantively similar.

Missing data were not a serious issue in this analysis. Six variables (5 endogenous and 1 control variable) had missing information, and the percentages of missingness were small (ranging from 3% to 11%). The weighted least squares estimators in Mplus handle missing data using full information maximum-likelihood (FIML) estimation and the estimators are consistent under the MARX[6] missing data assumption (Asparouhov & Muthen, 2010). Yet, Mplus cannot automatically handle missing data in the exogenous (control) variables.[7] Given the very low level of missingness in the control variable, listwise deletion was employed and the final analysis sample consisted of 360 parent-child dyads.

7. Results

Table 1 reports descriptive statistics for the variables used in the current study. Drug use was a relatively common problem among G3 subjects during adolescence; 37% of them reported drug-using behavior between ages 14 and 18. Recall the high-risk nature of G2 subjects—over half of the G2 respondents (62.4%) experienced at least one occurrence of school suspension/expulsion (with a mean of 1.47 times) and dropped out/did not graduate from high school (51.7%). The mean age when G2 had his/her first child (i.e., G3) was below 20 years. Yet, even in this disadvantaged sample, there existed generally effective G2 parenting of G3, relatively high levels of G3 school bonding, and low levels of G3 beliefs favoring drug use. Table 2 shows the results from logistic regression of the prevalence of G3 drug use on G2 school discipline. As expected, parental school suspension/expulsion during adolescence was positively associated with the prevalence of offspring drug use during adolescence. While holding other socio-demographic variables constant, a one-time increase in parental exclusionary school discipline increased the odds of offspring drug use by a factor of 1.159 (or an increase of 15.9%).

Table 1
Descriptive statistics

Variables	Mean (Proportion)	S.D.	Min	Max
G3 prevalence of drug use	0.37	0.48	0	1
G2 school discipline	1.47	1.58	0	7
G2 school dropout/non-graduation	0.52	0.50	0	1
G2 adult drug use (log transformed)	0.88	1.79	0	5.90
G2 adult economic hardship	0.55	0.61	0	2
G2 effective parenting of G3	4.17	0.42	2.68	5
G3 school bonding	3.07	0.32	1.50	3.92
G3 drug beliefs	1.09	0.27	1	3.25
G2 male	0.61	0.49	0	1
G2 African American	0.77	0.42	0	1
G2 Hispanic	0.15	0.35	0	1
G2 age at G3's birth	19.79	2.70	13.20	26.10
G2 neighborhood disadvantage	0.09	0.90	−2.26	1.51
G3 male	0.50	0.50	0	1
G2 contact with G3	5.19	1.54	0	6
G3 cognitive ability	90.34	12.39	45	126

Abbreviation: S.D. = standard deviation.

Table 3 contains a full correlation matrix of the exogenous and endogenous variables used in the study. As expected, in a bivariate sense, parental (G2) school discipline was positively correlated with G2 school dropout ($r = 0.319$, $p < .001$), G2 adult drug use ($r = 0.205$, $p < .001$), and the prevalence of offspring (G3) drug use ($r = 0.179$, $p < .01$). Although parental school discipline was not directly correlated with G2 adult economic hardship, G2 effective parenting of G3, G3 bonding to school, and G3 drug beliefs, parental school dropout showed correlations with G2 adult drug use ($r = 0.213$, $p < .01$), G2 economic hardship ($r = 0.286$, $p < .001$), and G3 bonding to school ($r = -0.174$, $p < .05$). In addition, G3 bonding to school was correlated with G3 drug beliefs ($r = -0.183$, $p < .01$), G2 economic hardship ($r = -0.136$, $p < .01$), and G2 parenting of G3 ($r = 0.134$, $p < .01$); G3 drug beliefs were also either significantly (or marginally significantly) correlated with G2 adult drug use ($r = 0.078$, $p = .058$), G2 economic hardship ($r = -0.116$, $p = .054$), and G2 effective parenting of G3 ($r = -0.066$, $p < .05$). Finally, the prevalence of offspring (G3) drug use was positively correlated with parental (G2) adult drug use ($r = 0.196$, $p < .01$), G3 drug beliefs ($r = 0.247$, $p < .001$), and negatively correlated with G3 bonding to school ($r = -0.249$, $p < .001$). Informed by the correlation matrix in Table 3, we continued to examine our theoretical model of G2 school suspension/expulsion on G3 drug use because indirect effects are equally, if not more, theoretically meaningful.

The results of the path analysis are illustrated in Fig. 2. The theoretical model fits the data well. The chi-square test was not statistically significant ($\chi^2 = 15.666$, $d.f. = 13$, $p > .05$) and other indices also suggested adequate model fit (RMSEA = 0.024, CFI = 0.987, and SRMR = 0.059). Given the adequacy of the final model, we turn our attention to interpreting the intervening pathways that transmit the intergenerational impact of parental (G2) exclusionary school discipline on offspring (G3) drug use.[8]

[5] A significant direct relationship between parental (G2) school discipline and offspring (G3) drug use, however, is not necessary to establish mediation.

[6] MARX indicates missing at random with respect to X.

[7] While including the means or variances from the exogenous variables in the model may render them "endogenous", we do not feel the practice appropriate in our case (e.g., making distributional assumptions such as normality).

[8] For pictorial clarity, the arrows indicating the covariance between G2 adult economic hardship and G2 adult drug use and G2 parenting of G3 are not shown in Figure 2; the arrow indicating the covariance between G3 school bonding and G3 drug beliefs is also not shown in Figure 2.

Table 2
Logistic regression of G3 drug use (prevalence) on G2 school discipline (N = 360)

	b	se	OR
G2 school discipline	0.147*	0.073	1.159
G2 male	0.513^	0.277	1.671
G2 African American	−0.044	0.430	0.957
G2 Hispanic	0.391	0.519	1.478
G2 age at G3's birth	−0.079^	0.046	0.924
G2 neighborhood disadvantage	−0.156	0.131	0.855
G3 male	0.239	0.228	1.270
G2 contact with G3	−0.043	0.079	0.958
G3 cognitive ability	0.023*	0.010	1.023

Abbreviation: s.e. = standard error; OR = odds ratio.
* p < .05.
^ p < .10.

We identified multiple intervening pathways that might be transmitting the risk. Parental (G2) exclusionary school discipline led to G2 adult drug use, which, in turn, increased the likelihood of offspring (G3) drug use. In addition, G2 exclusionary school discipline increased the likelihood of G2 school dropout/non-graduation, which then led to G2 adult drug use, economic hardship, and ineffective parenting of G3. Consequently, the three mediators in G2 adulthood led to higher levels of G3 attitudes/beliefs favoring drug use, and two of the three mediators (i.e., G2 adult economic hardship and ineffective parenting) compromised the development of G3's bonding to school. Eventually, such lack of bonding to school and possession of drug use favoring attitudes/beliefs increased the likelihood of G3 drug use during adolescence.

On the other hand, inconsistent with the bivariate correlation (as shown in Table 3), G2 school dropout/non-graduation was not directly associated with G3 bonding to school, and including the pathway did not significantly improve the fit of the model. We thus did not include it in the final model. That is, the potential pathway from parental school dropout/non-graduation to offspring school bonding and then drug use was not supported. As expected, parental (G2) adult drug use did not show direct influence on G3's bonding to school (as the bivariate correlation indicated). Moreover, when the mediating pathways were considered, the direct relationship between G2 school suspension/expulsion and the prevalence of G3 drug use became statistically non-significant.[9] We provide detailed discussion of these findings in the next section.

8. Discussion

The dramatic rise in school suspensions and expulsions brought on by both zero tolerance policies and the fear inspired by school violence and shootings, has had a number of unanticipated adverse consequences (Hirschfield, 2008; Kupchik, 2016; Losen, 2015). The impact of school exclusionary policies on the school-to-prison pipeline is well documented (Wald & Losen, 2003). Prior research has also found that students who are suspended or expelled from school have a higher rate of problematic behavior such as drug use and delinquency (Dong & Krohn, 2019; Hemphill et al., 2006; Kaplan & Fukurai, 1992; McCrystal et al., 2007). Importantly, exclusionary school punishment also leads to other collateral consequences such as lower school achievement and dropping out of school (Arcia, 2006; Noltemeyer et al., 2015; Perry & Morris, 2014). Lower educational achievement further contributes to adversities in multiple life domains (Barton, 2005; Conger & Donnellan,

[9] Table A1 in the appendix reports the coefficients of relevant control variables on G2 school dropout, G2 adult drug use, G2 adult economic hardship, G2 effective parenting of G3, G3 school bonding, G3 drug beliefs, and G3 prevalence of drug use during adolescence. For brevity, we do not include discussion on those coefficients here.

Table 3
Zero-order correlations among exogenous and endogenous variables used in path analysis (N = 360)

Correlations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. G3 drug use	1														
2. G3 drug beliefs	0.247***	1													
3. G3 school bonding	−0.249***	−0.183**	1												
4. G2 parenting of G3	−0.039	−0.066^	0.134**	1											
5. G2 economic hardship	0.088	−0.116^	−0.136**	−0.252***	1										
6. G2 adult drug use	0.196**	0.078^	−0.042	−0.063	0.119*	1									
7. G2 school dropout	−0.005	0.128^	−0.174*	−0.087	0.286***	0.213**	1								
8. G2 school discipline	0.179**	0.059	−0.070	0.041	0.021	0.205***	0.319***	1							
9. G2 male	0.191*	0.114	0.025	0.309***	−0.429***	0.165*	0.134	0.222**	1						
10. G2 African American	−0.174^	−0.083	0.116	0.026	0.218**	−0.081	−0.181*	−0.053	−0.341***	1					
11. G2 Hispanic	0.156	0.042	−0.029	−0.053	−0.143^	0.051	0.187^	0.026	0.207*	−0.977***	1				
12. G2 age at G3's birth	−0.063	−0.034	0.201***	0.119*	−0.278***	−0.047	−0.275***	−0.041	0.382***	−0.139^	−0.114	1			
13. G2 neigh. Disadvantage	−0.079	0.011	−0.003	0.019	0.082	−0.040	0.178**	−0.058	−0.079	0.049	0.307***	−0.170**	1		
14. G3 male	0.097	0.014	−0.140*	−0.158*	−0.042	−0.080	−0.027	−0.079	−0.003	−0.130	0.135	−0.081	0.022	1	
15. G2 contact with G3	−0.105	−0.009	0.000	−0.318***	0.154**	−0.068	−0.131*	−0.179***	−0.781***	0.082	−0.100	−0.037	−0.012	0.052	1
16. G3 cognitive ability	0.155*	0.017	0.002	−0.013	0.021	−0.030	−0.131*	0.031	−0.080	−0.192**	−0.061	0.077	−0.115*	0.034	0.090^

*** p < .001.
** p < .01.
* p < .05.
^ p < .10.

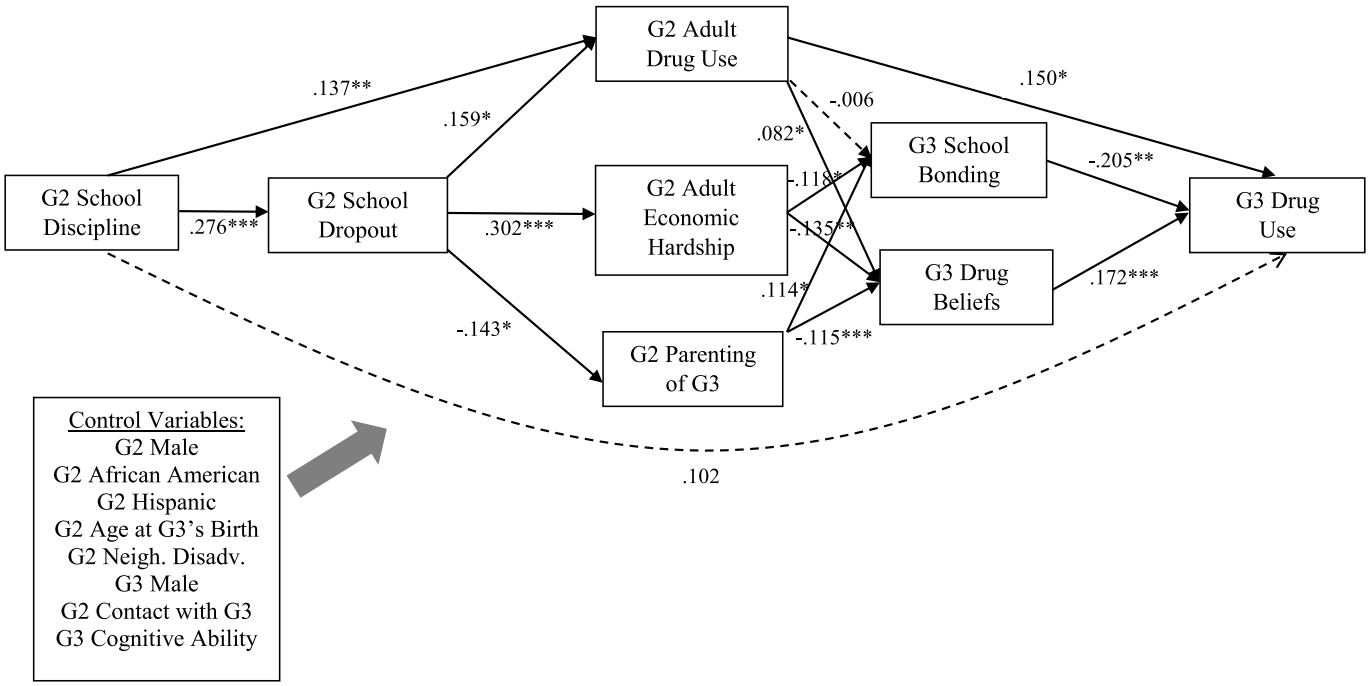

Fig. 2. Path analysis of associations among G2 school suspension/expulsion, G2 school dropout, G2 adult drug use, G2 adult economic hardship, G2 parenting of G3, G3 school bonding, G3 drug beliefs, and G3 prevalence of drug use ($N = 360$).
Notes: $\chi^2 = 15.666$ (d.f. = 13, $p = .268$); RMSEA = 0.024 (Probability RMSEA ≤ 0.05 equals 0.863); CFI = 0.987; SRMR = 0.059.
The model reports partial coefficients for theoretical variables of interests while controlling for sociodemographic characteristics of G2 and G3 subjects. See Appendix A for all regression coefficients. For pictorial clarity, the arrows indicating the covariance between G2 adult economic hardship and G2 adult drug use and G2 parenting of G3 are not shown in the figure; the arrow indicating the covariance between G3 school bonding and G3 drug beliefs is also not shown in the figure. $^{***}p < .001$; $^{**}p < .01$; $^{*}p < .05$. Standardized coefficients reported in the figure.

2007; Ettekal et al., 2019; Rouse, 2005; Waldfogel et al., 2007).

The effects of exclusionary school policies on the life chances of those students directly affected by them is in itself a serious problem. However, what we were concerned about in this study is the impact that school exclusion of one generation has on the next generation. We hypothesized that school exclusion of parents when they were adolescents increases the likelihood of their children using illicit drugs when they are teenagers. More specifically, we examined the pathways through which school exclusion in one generation affected problematic behavior among the subsequent generation, suggesting that school exclusion increased the likelihood of dropping out of school, which, in turn, led to increased adult drug use, economic hardship, and dysfunctional parenting. We predicted that parents faced with these issues would have children who possessed attitudes/beliefs favoring drug use and less bonding to school, and manifested an increased likelihood of using drugs.

Our results largely support the hypothesized pathways. Parents who are suspended or expelled during their adolescence are more likely to drop out of school, and use drugs in their adult years. This finding has been demonstrated in prior research, and suggests that the combination of labeling effects and unstructured and unsupervised socialization leads to involvement and continuation in problematic behavior (Dong & Krohn, 2019). Dropping out of school or non-graduation is related to a higher probability of drug use, to financial difficulties and welfare reliance, and to poor parenting practices. Parental adult drug use is in turn related to drug use among their children. There thus exists an indirect relationship between parental school exclusion and drug use among their children through parental adult drug use. We also found indirect relationships between school exclusion and children's drug use through school dropout/non-graduation, then adult economic hardship, ineffective parenting and the child's possession of attitudes/beliefs favoring drug use and lack of school bonding.

Although adult economic hardship and parenting practices are related to offspring school bonding, neither parental school dropout/non-graduation nor parental drug use are. To some extent, it is surprising to see that parental school dropout did not have a direct impact on their child's school bonding (though the bivariate correlation is statistically significant). It is possible that having observed the consequences of dropping out of school themselves (as well as addiction to drugs), parents are particularly attentive to their child's behavior and attitude toward school. It may also be that the other factors such as being financially disadvantaged and dysfunctional parenting are simply more important in determining a child's bonding to school. On the other hand, as expected, parental adult drug use, economic hardship, and parenting practices affected how a child perceived drug-using behavior.

It should be noted that zero tolerance measures, especially after the Gun-Free Schools Act of 1994 most likely had their impact after most of our parent (G2) sample graduated or dropped out of school. We began our study of 7th and 8th graders in 1988 and by 1994 most had graduated. As such, our estimates may be conservative.

Our findings have some important implications. Not only did we find that exclusionary school practices result in a number of adverse collateral consequences within one generation of respondents, but the effects of such experiences are felt by the next generation. Theoretically, it substantiates Elder's observation that events that happen to one generation are linked to those in the next generation (Elder Jr, 1985; Elder Jr, 1998). We have provided some evidence showing that when school officials decide to exclude youth from school (potentially a life turning point for those students), it may set in motion a series of consequences, which jeopardize the well-being and life chances of the next generation. These findings are also consistent with the family stress and family investment models embedded in the social causation perspective on the socioeconomic context of human development (Conger & Donnellan, 2007).

The practical implications of our findings are evident. Exclusionary school practices should only be used as a last resort (Kupchik, 2016;

Losen, 2015). Whenever possible, disciplinary practices in school need to involve inclusionary efforts to re-integrate students into the larger school community rather than excluding them from the educational and social benefits that will provide them with greater opportunities to succeed and keep them out of trouble.

If schools do not remove students who continue to violate school rules and are a potential threat to other students or to the educational process in the classroom, what then should be done? There have been several suggestions ranging from assessing the actual threat students pose as a way to limit school suspensions (Cornell & Lovegrove, 2015) to better training of teachers and counselors that increase their sensitivity to student needs (Gregory, Allen, Mikami, Halen, & Pianta, 2015). In addition, much like we have witnessed with juvenile justice programs, inclusive strategies based on restorative justice principles (Braithwaite, 2002) have been put into action and found to be effective (Anyon et al., 2014; Gonzalez, 2015; McNeill, Friedman, & Chavez, 2016). In a recent systematic review of randomized controlled trials, Valdebenito, Eisner, Farrginton, Ttofi, and Sutherland (2019) reported that four approaches presented short-term effectiveness in reducing school exclusion: enhancement of student academic skills, mentoring/monitoring programs, skills training for teachers and counselling/mental health services in schools. They concluded that schools can adopt effective alternative approaches to managing discipline, rather than exclusion. Given that the damaging collateral consequences of exclusionary school punishment are increasingly recognized, several school boards have instituted school discipline reform, limiting the use of suspensions and expulsions. Yet, there are still obstacles to such reform measures including budgetary constraints and the ingrained attitudes of many educators and the general public (Kupchik, 2016). Our findings suggest that not only is continued reform imperative for the well-being of current students, but will also be important for the next generation of students.

Besides limiting the use of exclusionary school punishment, it is also important to provide second-chance opportunities for those who have been excluded from or dropped out of school. Polidano, Tabasso, and Tseng (2015) found that the chances of re-engaging in education or training decrease with time out from school (i.e., negative duration dependence), which implies that measures to return early school leavers to education should be directed at the period soon after leaving school. They also argued that helping students develop a career plan early may be effective in preparing them for further study in the event that they leave school early. Previous research evaluating the second-chance education, employment, and national service programs (e.g., Job Corps, YouthBuild, Service Corps, AmeriCorps, and Youth Opportunity Grants) demonstrates varying degrees of success to increase the likelihood of being employed and having higher paying jobs and to reduce reliance on public assistance, out-of-wedlock pregnancies, and problematic behavior (including drug use) and contact with the criminal justice system (Barton, 2005). Yet, despite the overall positive effects, federal investment in the creation and development of second-chance education and training opportunities has been declining since the 1980s (Barton, 2005; Zuckerman, 2001). Given both the within-generation and intergenerational consequences of exclusionary school punishment and educational deficiency, it might be time to enhance investment and provide sustained education, employment, and national service programs to a magnitude equal to the need of out-of-school, unemployed (in particular, minority) youth. We concur with Chen and Kaplan (2003) that “programs that assist with coping strategies, training, or alternative avenues to success may be able to divert the accumulating negative consequences that are set in motion by early failure” (p.120).

Our research is not without limitations. We consider these areas where future research can expand our knowledge. First, we would have liked to explore the probability of intergenerational continuity in being the recipient of exclusionary school disciplinary practices. Unfortunately, we did not have adequate data on school exclusion for the children (G3) in our study. The continuity across generations in dropping out of school/non-graduation would also have been important to explore, but many of our G3 respondents had not reached the age at which they should have graduated from high school. Second, correlation does not imply causation in the path models, and there may be selection bias. The long time frame of the path model may bring into question some internal validity issues. Despite controlling for key parent (G2) and offspring (G3) sociodemographic factors, other factors could simultaneously contribute to G2 school exclusion (the focal variable in the study) and G3 drug use. Although the model developed in this study fits the data well statistically, there may be alternative models that can explain the data. For instance, there are other collateral consequences of school exclusion such as interparental conflict in the home and other emotional and behavioral problems (e.g., depression, anxiety, and aggressive and delinquent behavior). With appropriate data, future research may incorporate additional mediators in the theoretical model and assess more complex intervening pathways.[10] Third, and relatedly, future research should explore how other caregivers in the home (e.g., the other parent or G3's grandparents) may condition the intergenerational pathways from parental school exclusion to offspring drug use. Fourth, school suspension and expulsion (which is more severe) may have differential impacts both within one generation and onto the next generation. Yet, we could not separate these two practices with our data. Finally, this study uses a high-risk, predominantly African American sample (with their oldest biological child) in a single U.S. city and covers the time period between the late 1980s and early 2010s. Replicating our findings with other samples drawn from other settings and time periods is crucial, especially given the paucity of multigenerational studies that have investigated this issue with prospective data.

Despite these limitations, our findings make important contributions to the literature by elucidating how school exclusion of parents when they were teenagers has cascading effects that affect their own life chances and reach beyond to the lives of their children. We conclude by arguing that effective school management (and discipline) is not achieved simply through exclusionary practices. Instead, a more positive school environment and greater student achievement may be attained through a host of programs that help students develop academic skills and career plans, train teachers/administrators to more effectively respond to student misbehavior as well as needs, and foster trust and caring relationships between the two. Only in this way can we stop a down-ward cycle of economic or social failure, particularly experienced by the minority and disadvantaged groups.

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Supplementary data

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[10] For instance, in this study, to preserve temporal order between G2 effective parenting of G3 and G3 drug use, we didn't examine G2 parenting of G3 as a consequence of parental problematic behavior and financial difficulties.

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