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EDUCATIONAL MOBILITY AND CHANGE IN CRIME BETWEEN ADOLESCENCE AND EARLY ADULTHOOD

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INTRODUCTION

A global recession, rapidly increasing economic inequality, and perceptions of a disappearing middle-class make the prospects of downward mobility an increasing concern within the United States. At the same time, the increasing rewards of a college degree and increasing enrollments of women and first generation college students suggests a degree of upward educational mobility (Diprete & Buchmann, 2006; NCES, 2015; Pascarella et al., 2004). Though the study of social mobility has a long history within both sociology and criminology, contemporary studies of its relationship to crime, and desistance from crime, are surprisingly few in number (Savolainen et al., 2014). In part, this may reflect the contentious literature surrounding the generally weak relationship between socioeconomic status and crime (Dunaway et al., 2000).

More often considered by studies of criminal desistance are the static effects of adult role transitions such as employment and education, which have generally been found to be associated with reduced criminal behavior in adulthood (Jacob, 2011; Siennick & Osgood, 2008). Yet this overall relationship likely masks considerable heterogeneity in the effects of transitions on crime. It is often implicitly assumed that achieved education represents a positive turning point in the life course given its strong, positive correlation with employment opportunities. This is often the case in studies of institutionalized samples, many of whom have dropped out of the educational system, and for whom the alternatives are poverty, homelessness, or a return to prison. In more general population based samples, however, whether attained education in adulthood is really a turning point may depend on the socioeconomic resources associated with the transition, and how these resources compare to the resources one has experienced earlier in the life course.

This second issue raises the question of social mobility. For those growing up in poverty, any achieved SES (i.e., obtaining a high school diploma) may indeed represent a positive turning

point within an individual's life course. For those growing up in middle class or more advantaged circumstances, however, the meaning of education and its relationship with crime may be contingent on whether the achieved level represents upper (or stable) versus downward mobility within a longer term trajectory of intergenerational socioeconomic attainment.

Using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), this study analyzes the role of education from a life course perspective by considering an individual's social mobility pathway from childhood to adulthood and its implications for change in crime and desistance between adolescence and early adulthood. Drawing on strain and other criminological theories we hypothesize that upward social mobility will be associated with reduced crime net of other factors, and that downward mobility will be positively associated with changes in crime over the life course.

LITERATURE REVIEW

SOCIOECONOMIC STATUS AND CRIME

The relationship between socioeconomic status and crime is one of the oldest concerns in criminology, and one of considerable debate. Despite the widespread assumption that poverty and low socioeconomic status should be associated with crime, most studies have found a weak overall correlation between socioeconomic status and crime (Dunaway et al., 2000; Tittle & Meier, 1990). Part of the reason for these weak and mixed results, however, is due to differences in the types of data used (i.e., official data versus self-report), types of crime considered (i.e., violent versus more minor offenses and white collar crime), nature of the samples (i.e., institutionalized versus general population), and the potentially off-setting effects of mediating

mechanisms (Dunaway et al., 2000). With respect to these off-setting effects, Wright and colleagues argue that low socioeconomic status is positively associated with crime due to the chronic strains of low income, whereas high socioeconomic status is positively associated with crime due to the greater risk taking afforded by greater social power (Wright et al., 1999). In the aggregate, these effects may wash each other out.

Studies focused on particular stressors associated with poverty have tended to find a stronger relationship between poverty and crime. For example, Agnew and colleagues found that the experience of multiple economic problems was positively associated with delinquency (Agnew et al., 2008). The vast research on neighborhood poverty also strongly indicates a relationship between neighborhood disadvantage and crime (e.g., Sampson, Raudenbush, & Earls, 1997; Wilson, 1997).

EDUCATIONAL MOBILITY AND CRIME

A limitation of previous research is the tendency to treat the relationship between socioeconomic status and crime statically, at a single point in time. Very few have considered how changes in socioeconomic status across the life course – i.e., social mobility – are related to crime and desistance. In fact, the authors of one recent exception noted, "we are not aware of a single prior study that examines individual differences in criminal behavior from the perspective of intergenerational social mobility" (Savolainen et al., 2014: 2). However, they found little relationship between educational mobility and crime, using data from a Finnish birth cohort study (Savolainen et al., 2014). The dearth of studies in this area clearly suggests that more research is needed, particularly within the U.S.

Educational mobility is particularly important in light of the continuing expansion of higher education within the United States, as well as its increasing value relative to a high school degree. For instance, the percentage of all 18 to 24 year olds enrolled in post-secondary education has risen from about 25 percent in 1965 to 41 percent in 2012, with even sharper increases among women (NCES, 2015). Women now outpace men in both enrollments and college completion, in part due to the increasing income returns to higher education (Diprete & Buchmann, 2006). All of these trends suggest a considerable degree of intergenerational educational mobility, as do concerns regarding the challenges of being a "first generation" college student (Pascarella et al., 2004). Research on social mobility also suggests that four-year college completion is an important leveler of opportunities. For instance, Torche (2011) found no intergenerational association in occupational status amongst those who had completed a college degree, though intergenerational advantages were observed at the graduate degree level.

HOW DOES EDUCATIONAL MOBILITY MATTER?

There are a variety of mechanisms through which educational mobility might be expected to decrease crime over the life course. Perhaps most obvious is the fact that educational attainment promotes employment and earnings (Grubb, 2002), a central focus of research on desistance from crime. Past research has generally found a negative relationship between employment and criminal activity (Good et al., 1986; Jacob, 2011; Siennick & Osgood, 2008; Van Der Geest et al., 2011), whether due to greater economic resources, changes in routine activities, or increases in pro-social bonds. At the same time, past research has identified a range of factors that moderate the relationship between employment and crime. For example, the duration and timing of employment may moderate its crime reducing potential (Crutchfield &

Pitchford, 1997; Uggen 2002; Webster et al., 2007). In addition, jobs providing higher wages, employee satisfaction, and opportunities for advancement are more likely to reduce crime (Calvó-Armengol, Verdier, & Zenou, 2007; Cox 2010; Engelhardt et al. 2008; Uggen, 1999; Wadsworth, 2006). Thus, to the extent that upward educational mobility promotes employment opportunities characterized by greater stability and quality, we expect it to also be associated with lower crime. Conversely, to the extent to that downward educational mobility is associated with economic stressors such as problems paying bills, food insecurity, and the like, it may motivate crime (Agnew et al. 2008).

Prior research has also shown that other life-course transitions such as marriage may promote desistance (Laub, Nagin & Samson, 1998), again depending on its stability and quality (Laub, Nagin & Sampson, 1998; Forrest, 2014). Demographic research also suggests that marriage is an increasingly stratified institution, with higher marriage rates and lower divorce rates among those with college degrees (Cherlin, 2010). Thus we will examine whether family formation transitions such as marriage, cohabitation, and child rearing mediate the association between educational mobility and change in crime.

Educational mobility may also influence crime through changes in social psychological mechanisms such as depression, self-efficacy, and perceived social standing. Educational attainment is known to promote a sense of self-efficacy (Ross & Mirowsky, 1989; Schieman and Plickert, 2008), which past criminological research has shown to be negatively associated with criminal activity (Ludwig & Pittman, 1999). Educational attainment is also associated with lower depression (Miech & Shanahan, 2000), in part through promoting a greater sense of control in dealing with life stressors (Ross & Mirowsky, 1989).

That emotions are important for crime is a central tenet of general strain theory (Agnew 1992; 2001), which asserts that the experience of strain produces negative affect (e.g., anger, depression), which in turn leads to coping responses such as crime. Strains may reflect the loss of a positively valued resource, the occurrence of negative experiences, or other forms of goal frustration (Agnew, 1992). Agnew has described characteristics of strains most likely to produce crime, including those perceived as unjust, high in magnitude, associated with low social control, and that create pressures or incentives for crime (2001; 2006). Strain theory is thus particularly important for thinking about how downward educational mobility might be related to change in crime. Downward educational mobility likely results in a loss of economic resources and social prestige, it presents new negative experiences in the form of economic difficulties and possible social disapproval, and may represent the frustration of not having achieved goals such as middle class status. Downward educational mobility may be perceived as being unjust, particularly for those born into advantaged circumstances, for whom the American dream may be considered a birthright. Downward mobility is also likely to be seen as of high magnitude, and to have developed over a relatively long period of time.

Our focus on educational mobility, as distinct from current educational attainment, also relates to Agnew's distinction between objective and subjective strains, and the notion that *subjective* strains are more important for understanding crime than are *objective* strains (Froggio & Agnew, 2007; Wheaton, 1990). Subjective strain refers to events that an individual dislikes, whereas objective strain refers to life events that are regarded by most individuals as stressful (Agnew, 2001). We contend that low educational attainment is an objective strain. Whether it is also a subjective strain likely depends on whether it represents downward mobility, or a

continuation from one's upbringing. To capture this subjective side of educational mobility we will incorporate a measure of subjective social standing (Demakakos et al., 2008).

For present purposes, it is important to note that Agnew (2001) has described failure to achieve educational goals and occupational success as strains that are *less* likely to lead to crime, in part because these strains are not easily addressed through criminal activity (e.g., one cannot simply steal a diploma). However, we would contend that failure to achieve upward educational mobility is quite different from the experience of downward mobility. Among youth growing up in advantaged circumstances, graduating from college and achieving a middle class status are highly expected, and failure to do so may engender negative affect.

SUMMARY OF THE PRESENT STUDY

To summarize, the present study assesses the relationship between educational mobility and change in crime between adolescence and early adulthood (i.e., early 30s), within a recent and nationally representative sample in the United States. For all of the reasons outlined above, we expect upward educational mobility to be associated with decreases in crime between adolescence and adulthood. Conversely, we hypothesize that downward educational mobility will be associated with increases in crime across the life course. In addition, we assess several mechanisms through which educational mobility is associated with changes in crime, including adult role transitions (e.g., employment, marriage, and childrearing), economic strains (e.g., welfare receipt, food insecurity, problems paying bills), and social psychological characteristics in adulthood including depression, self-efficacy, and subjective social standing.

DATA AND MEASURES

DATA

The dataset used for this research is The National Longitudinal Study of Adolescent to Adult Health (Add Health). Add Health is a study of adolescents in the United States, grades 7 - 12 in 1994-95, with three subsequent data collections, with the last collection (Wave IV) in 2007-08, when respondents were largely between 25 and 32 years of age. Data were collected from adolescents and their peers (including romantic partners), as well as their parents, siblings and school administrators. This research incorporates data from Waves I and IV.

Dependent Variable

Crime. One's involvement in crime was measured at wave IV based on nine self-reported indicators. The items are measured by asking respondents how often they did any of the following in the last 12 months: deliberately damage property that didn't belong to you, steal something worth more than $50, go into a house or building to steal something, use or threaten to use a weapon to get something from someone, sell marijuana or other drugs, steal something worth less than $50, take part in a physical fight where a group of your friends was against another group, get into a serious fight, and hurt someone badly enough in a physical fight that he or she needed care from a doctor or nurse. Each of these items was coded a 0 if the event never happened, 1 if the event happened 1 or 2 times, 2 if the event happened 3 or 4 times and 3 if the event happened 5 or more times. A sum of all nine responses was used to create the final delinquency and crime variable. Given that each of the nine items ranges from 0 to 3, the final count variables had a possible minimum value of 0 and a possible maximum value of 27, although these data yielded a max value of 22 (Cronbach's $\alpha = .718$).

Independent Variables

Delinquency. Delinquency was measured at Wave I in the same manner as the dependent variable, which also asked respondents to report their involvement in the same nine items. As with the dependent variable, delinquency ranges from 0 to 27 (Cronbach's $\alpha = .80$).

Education. Respondent's education at Wave IV is based on the max value of their achieved education (ranging from 1 to 5). Education was coded as 1 for those with less than a high school degree, 2 for those with a high school degree, 3 for those with some college, 4 for those who have completed a four year degree, and 5 for those who completed at least some graduate school. This same coding scheme was used for measuring the education level of the respondent's parent(s) at Wave I. The only difference being that parent's education is based on the max value of either parent's education level.

Social Mobility. Social mobility within Add Health can be observed in a mobility transition matrix (see Table 1), which is a cross-tabulation of parent's education and respondent's achieved education. A complete log-linear analysis of the relationship between parent and respondent's education is beyond the scope of this analysis, nevertheless, several observations can be made. First, the correlation between parent's and respondent's education is high at .40.

[Table 1 here]

Summarizing the transition matrix into its components of family education, achieved education and mobility raises methodological challenges. Although a simple measure of the

difference between achieved and family education can be calculated, it is not possible to include it in a model that also controls for prior and current education, because mobility is a linear combination of the other two measures (see Houle (2011) for an excellent discussion of these issues). We overcome the issue of differentiating mobility from the effects of origins and destinations in a two-step process. First, to minimize the effects of small distance changes in education, we collapse our measure into three levels of low, middle, and high education. As seen in Table 1, having less than a high school degree was considered low education. Having a high school degree and/or some college (including an associate's degree and/or trade schooling) placed an individual in the mid-level, and having a four-year degree and/or any education beyond a four year degree was treated as high education. Next, we created nine indicator variables representing the possible mobility combinations of low, middle, and high education at each Wave. In the models to follow, the category of stable middle education is used as the excluded comparison groups.

It is recognized that this is a somewhat arbitrary approach, and thus in sensitivity analyses we have examined how the results vary across alternative specifications. These include: 1) models including the simple educational change score, and controls for family SES, educational attainment, and current employment status; and 2) models including dichotomous indicators of upward and downward changes and controls for family SES and achieved SES. In all cases we found evidence of associations of social mobility with crime in ways that are consistent with the preferred measures presented here (results available upon request).

Additional Covariates. Demographic controls included in the multivariate analyses were a measure of age at Wave IV (as well as a quadratic term), a dichotomous indicator of sex (with

males coded as 1 and females coded as 0), and five mutually-exclusive indicators of race and ethnicity, including: non-Hispanic white, non-Hispanic black, non-Hispanic Asian, non-Hispanic American Indian or other race, and Hispanic origin . A dichotomous indicator for an individual living with both of their biological parents was measured at Wave I. Other dichotomous familial variables were measured at Wave IV indicating being married with and without children, cohabiting with children, cohabiting without children, single with children and single without children (being married with children is the reference category in the models).

The respondent's current labor force participation status was assessed with indicator variables, including: currently employed (the reference category), unemployed, disabled or sick, retired or homemaker, active in the military, and currently a student. A continuous indicator of parent's occupational status at Wave I was included (see Ford, Bearman & Moody, 1999), as well as neighborhood disadvantage at Wave I, which was constructed by taking the average of the proportion of adults unemployed, proportion of families below poverty, proportion of households receiving public assistance, and proportion of households headed by a female with children under 18 years of age (all at the census tract level) (Cronbach's $\alpha = .93$).

Self-efficacy was measured at Wave IV by taking the average of four questions assessing on a Likert scale how often in the past 30 days the respondent: felt that you were unable to control the important things in your life (reversed coded), felt confident in your ability to handle personal problems, felt that things were going your way, and felt that difficulties were piling up so high that you could not overcome them (reverse coded) (Cronbach's $\alpha = .72$). An indicator of one's perceived SES was measured at Wave IV by asking respondents where they see themselves on a hypothetical social ladder compared to others in the United States (ranging from 1 to 10). Depression at Wave IV was measured by taking the average of five statements that tap

depressive symptoms. Ranging from 0 (never or rarely) to 3 (most or all of the time), respondents were asked how often during the past seven days: you could not shake off the blues, even with help from your family and your friends, you felt depressed, you felt sad, you enjoyed life (reverse coded), and you felt happy (reverse coded) (Cronbach's $\alpha = .85$). To assess economic problems, a variable was created by counting how many of the following events had occurred to the respondent in the 12 months preceding Wave IV: you went without phone service due to a lack of money, you did not pay full rent or mortgage due to a lack of money, you were evicted from your apartment or house due to a lack of payments, you did not pay the full amount of utility bills due to a lack of money, you had services from the gas or electric company turned off, and you worried food would run out due to a lack of money (Cronbach's $\alpha = .74$). Finally, a dichotomous indicator was created for respondents (or others in the household) who had received any public assistance, welfare payments or food stamps (since Wave III). A similar control variable was included to assess parent's receipt of public assistance at Wave I. Table 2 provides descriptive statistics for the key measures used in these analyses.

[Table 2 here]

ANALYTIC STRATEGY

Given the nature of the dependent variable, negative binomial regression models were conducted. Negative binomial regression is best suited for a dependent count variable with skewed variability in the counts, which is the case in the construction of the crime variable (skewness = 7.740). The similarities in the measures of crime in adulthood and delinquency in adolescence allow for a lagged dependent modeling strategy in some models, which helps to control for stable differences between persons. Inclusion of delinquency at Wave I in all models

shifts the interpretation of the other covariates in the models to the prediction of change in criminal activity.

Missing data were handled using multiple imputation, with 5 imputations needed to achieve the desired degrees of freedom for more precise analyses. No additional covariates were included in the imputation process aside from the variables present in the full models. The weighted analytic sample after multiple imputation yielded an N of 14,742. All models employ the Add Health longitudinal sample weights that adjust for differential probabilities of sampling and retention.

RESULTS

BIVARIATE RELATIONSHIPS

An analysis of variance (ANOVA) implementing Tukey's multiple comparison of means was conducted at the bivariate level, and the distribution of crime by mobility pathways was reflective of our hypotheses (Figure 1). Regardless of one's mobility pathway, the highest reports of crime were among those who achieved low levels of education (less than a high school degree) while those who achieved high levels of education reported the lowest levels of crime (4 year degree and/or graduate school). With regard to stability at respective levels of education, crime was highest among those who were stable at low levels and lowest among those who were stable at high levels of education ($p < .001$). As expected, those whose parents had high levels of education but who did not finish high school themselves (i.e., experiencing pronounced downward mobility from high to low) reported the highest involvement in crime. The difference in crime between those who moved from high to low in education compared to those who were

stable at low throughout the life course was statistically significant ($p < .001$), thus supporting our focus on the role of intergenerational mobility, in addition to the effects of one's own educational attainment.

[Figure 1 here]

MULTIVARIATE MODELS

Table 3 presents the results of negative binomial regression models, in which the coefficients can be interpreted as percent change in the expected crime count for a one unit change in the independent variable, after computing [$exp\ (b_k x_k) - 1$]. For example, net of all other factors in model 1, being male increased the expected crime count by a factor of [exp (1.087) – 1] roughly 197% ($p < .001$).

[Table 3 here]

Model 1 includes eight of the nine indicators of change in education, with intergenerational stability at midlevels of education (i.e., high school diploma or some college) the excluded category, as well as demographic and socioeconomic controls from Wave I. This model does not include a control for prior delinquency in adolescence, so it is assessing differences in crime in adulthood, not change in crime.

We begin by focusing on those experiencing upward or downward mobility. Compared to being stable at middle levels of education, upward mobility from the middle level to completion of a four year degree decreased one's expected crime count by a factor of [exp (-.730) – 1] roughly 52% ($p < .001$). This is an important result, as respondents who graduated from a four-year college but whose parents only achieved some college, represent a sizable subgroup within the sample (i.e., over 10 percent). Conversely, downward mobility, from either high or medium

levels of parental education, to not completing high school is associated with higher expected crime counts. Finally, intergenerational continuity of college completion (i.e., the high-high group), compared to middle levels, is associated with a decreased expected crime count by a factor of [*exp* (-.689) – 1] roughly 50% ($p < .001$).

To partially address the issue of the potential selection of delinquent adolescents into mobility patterns, model two adds a control for delinquency at Wave I, making it a lagged dependent variable model, and shifting the focus of independent variables to predicting change in criminal activity between adolescence and adulthood. As expected, the indicators of mobility reflect similar patterns to that of model 1, with decreases in education (compared to one's parents) increasing the expected crime count and increases in education reducing crime.

Next we control for measures of employment status in adulthood, as well as family transitions, such as marriage, cohabitation, and co-residence with children, to see if these partially explain the relationships between educational mobility and crime. Though slightly attenuated in size, the relationships between educational mobility and crime retain statistical significance when controlling for familial and economic characteristics at Wave IV. For example, net of all other covariates in model 3, moving from mid to low levels of education increases the expected crime count by a factor of [*exp* (.178) – 1] roughly 19% ($p < .10$) while moving from mid to high levels of education decreases the crime count by [*exp* (-.565) – 1] roughly 76% ($p < .001$). All family types other than married with children and unemployment (compared to non-military employment) are associated with statistically significant increase in crime, whereas being in the military is associated with decreases in crime, compared to non-military employment.

In Model 4 we test whether the associations between educational mobility and crime are mediated by economic problems and welfare receipt in adulthood. All previously significant mobility indicators are attenuated somewhat, but mediation is strongly suggested for both cases of downward mobility. For example, the coefficient associated with downward mobility from high to low levels of education decreases from 0.421 to 0.209 (a reduction of 50%), and loses statistical significance. Although the estimates of upward intergenerational mobility appear to be slightly reduced, both moving from mid to high levels of education as well as stability at high levels remain significantly associated with reductions in the expected crime count ($p < .001$).

Lastly, we control for several social psychological concepts, including self-efficacy, perceived socioeconomic status, and depression, that may help to explain the remaining associations between educational mobility patterns and change in crime. Though self-efficacy and depression are both significantly associated with changes in expected crime counts, they do not appear to mediate much of the relationship between educational mobility and crime, with the partial exception of those in the high to high educational group. Even after an extensive list of covariates, moving from mid to high levels of education remains associated with a decreased expected crime count by a factor of [*exp* (-.454) – 1] roughly 36%.

SENSITIVITY ANALYSES

To further examine the role of educational mobility, and distinguish it from absolute levels of achieved education, we have run an additional set of models, presented in Table 4, that are stratified (i.e., run separately) by low, middle, and high levels of achieved education. Our primary motivation for these analyses is to show that it is not simply where people end up in achieved education that matters, but also from whence people have come. Stratification also

allows us to make additional comparisons between groups not limited to the stable mid category. This approach changes the reference category to stability at the respective level of achieved education, thus allowing for comparisons of the effects of mobility up or down to that particular level of education.

[Table 4 here]

Beginning with the low achieved education group in Model 1, compared to being stable at low levels of achieved education, those whose parents are college educated but who do not finish high school themselves have an increased expected crime count of [*exp* (.545) – 1] roughly 72% ($p < .05$). When referencing stability at middle levels of education (Model 2), downward mobility is again associated with an increase in the expected crime count of [*exp* (-.135) – 1] roughly 14% ($p < .05$). Among those who completed a four-year degree, upward mobility from the low educational category was associated with an increased expected count of crime, but this association is only marginally significant, and runs counter to expectations. We are thus reluctant to make too much of this pattern.

As this is a general sample, and we were interested in how educational mobility might predict change in crime for all respondents, our main results are not necessarily about "desistance" from crime. As a further sensitivity check, however, we ran models stratifying for whether respondents had engaged in any delinquency at Wave I. The results (available upon request) are consistent with our main findings, however, a few details are worth mentioning. Among those who were delinquent at Wave I, upward educational mobility was associated with lower levels of crime in adulthood, which is suggestive of desistance. At the same time, downward mobility (from high to low) was associated with higher crime counts. Among those not engaging in any delinquency in adolescence, both downward and upward mobility are

associated with crime in expected directions. One exception is observed for those whose parents had less than a high school diploma and who completed some college or a technical degree themselves (i.e., the low to middle group). This partial upward mobility was associated with a higher crime count in adulthood.

DISCUSSION

This study represents one of the first examinations of the relationship between educational mobility and change in crime between adolescence and adulthood in the United States. Overall, our results suggest that intergenerational educational mobility is an important correlate of crime. Multivariate analyses showed that downward educational mobility was predictive of increases in crime, whereas upward mobility was associated with decreases in the expected crime count. Analyses stratified by achieved education produced similar results, while also showing that those experiencing intergenerational stability of college completion reported the lowest levels of crime.

The analysis examined potential mediators of the relationships between upward and downward mobility and change in crime, drawing upon previous research on desistance and strain theory. Consistent with research on desistance, which has emphasized adult role transitions, we found that family formation and employment transitions mediated part of the association between downward mobility and change in crime. Further analysis of the relative roles of family versus employment related transitions (available upon request), revealed that family-related transitions of marriage, cohabitation, and childrearing were primarily responsible for this mediation. This is an interesting finding, and one that is consistent with the growing stratification of marriage and divorce by education (McLanahan, 2004). Those not completing

education may not be seen as good marriage material. This may be particularly the case for those growing up with parents who themselves have some college experience (i.e., the downwardly mobile).

More proximal measures of welfare receipt and economic problems further mediated the effects of downward mobility, particularly for those whose parents were college educated (i.e., the high to low mobility group). Reductions of economic troubles also partly mediated reductions in crime exhibited by first-generation college completers. These findings are consistent with recent applications of strain theory emphasizing the role of economic troubles (Agnew et al., 2008) Lastly, social psychological measures of self-efficacy and depression were found to be significantly associated with changes in crime, and to slightly mediate the experiences of the downwardly mobile, as well as differences between those who were stably college educated (i.e., the high to high group) and the stable middle education group. The classic strain emotion of anger is not available in Add Health.

Our results suggest the importance of distinguishing four-year college completion from two-year college completion (and those with "some college" experience), both for the parent and next generations. For example, the crime-reducing benefits of upward mobility was only exhibited by four-year college completers whose parents had some experience with higher education themselves (though not a four-year degree). Whether to actually call these "first generation" students is a matter of debate, with some researchers using a stricter definition that only considers those whose parents have no post-secondary experiences beyond high school (Pascarella et al., 2004). Using a stricter definition, being a first-generation college completer (i.e., the low to high group) was not associated with statistically significant reductions in crime.

One other caveat regarding an unexpected finding deserves mention. Among first-generation students who did not attain a four-year degree, we observed a marginally significant increase in crime. Our sensitivity analyses revealed that this was particularly among those who were not delinquent in adolescence. Though we would caution against placing too much emphasis on this result, it may reflect the unique challenges faced by first-generation students (Pascarella et al., 2004). Future research should further examine this group to distinguish those completing two-year degrees from those who started a four-year degree but were unable to persist to completion. In addition, future research might distinguish between four-year college completion and those completing graduate or professional degrees (Torche, 2011).

LIMITATIONS

Several study limitations should be noted. One potential issue is selection effects associated with educational mobility and crime. Our approach of lagged dependent variable models that control for past delinquency was chosen so as to capture some stable individual differences, yet we recognize that the possibility of unobserved heterogeneity remains. Thus we do not make strong claims regarding a causal effect of educational mobility. In addition, Add Health is a school-based sample, so some of the most disadvantaged individuals who had already dropped out of the school system are not included in the analyses. Thus we are likely missing some of the most dramatic instances of downward mobility, and hence our coefficients regarding the relationship between downward educational mobility and change in crime may be somewhat downwardly biased.

An important distinction within studies of social mobility is intragenerational versus intergenerational mobility. We were motivated to focus on intergenerational mobility due to the

increasing rates of college attendance, and the growth of first generation students. Thus, we did not examine intra- or within-generational educational mobility, such as non-traditional students who go back to school following a lengthy hiatus. Future research should examine this group. Another group to consider are those who do poorly in high school or who have low college aspirations or expectations, but nevertheless continue on for a college degree.

Given the increased stratification among higher educational institutions, it is becoming increasingly difficult to treat completion of college as an all-encompassing indicator without considering the quality or prestige of the institutions in which a degree is completed. Unfortunately, measures of prestige, reputation, or other indicators of quality are not available within Add Health.

We should also recognize that we did not consider other dimensions of intergenerational mobility, such as occupational mobility. This is due in part to Add Health data constraints, but also to our main interest in educational mobility. Though adolescents were asked about the occupations their parents, the resulting categories (e.g., professionals, managers) are too crude to match up with the more fine-grained occupational categories of respondents in adulthood. Use of respondent's current occupations would also raise issues of temporal ordering with crime.

CONCLUSION

These limitations in mind, the present study has shown that educational intergenerational mobility is associated with change in crime between adolescence and early adulthood, within a large, contemporary, and nationally-representative U.S. sample. This issue is critical due to the increasing importance of education, both for socioeconomic outcomes, as well as family life, physical and psychological well-being, and criminal behavior. It is also important given concerns

regarding rising educational stratification and inequality in U.S. society. As among the first studies of the role of educational mobility, it is hoped that these findings will contribute to future research of this important topic.

Table 1. Cross-Tabulation of Ascribed and Achieved Education

		Achieved Education					
		No HS	**HS**	**Some college**	**4 Yr. Deg.**	**Grad Sch.**	**Total**
Family Education	**No HS**	21.38%	25.12%	42.52%	7.42%	3.55%	1,604
	HS	12.02%	25.28%	46.15%	11.64%	4.91%	3,727
	Some college	6.07%	16.62%	50.95%	17.25%	9.11%	3,688
	4 Yr. Deg.	3.73%	10.79%	46.46%	24.28%	14.74%	3,698
	Grad Sch.	2.10%	5.35%	30.38%	34.00%	28.17%	2,765
		Low		Mid	High		

Table 2. Descriptive Statistics‡

Variable	Mean	SD	Min.	Max
Dependent Variable				
Crime	0.373	1.264	0	22
Independent Variables				
Delinquency	1.844	3.07	0	27
Low-Low	0.026	-	0	1
Low-Mid	0.067	-	0	1
Low-High	0.008	-	0	1
Mid-Low	0.052	-	0	1
Mid-High	0.104	-	0	1
High-Low	0.011	-	0	1
High-Mid	0.177	-	0	1
High-High	0.188	-	0	1
Additional Covariates				
Male	0.506	-	0	1
Age	29.963	1.878	26	35
Age^2	901.095	112.838	676	1225
Black	0.158	-	0	1
Hispanic	0.119	-	0	1
Asian	0.032	-	0	1
American Indian	0.007	-	0	1
Other Race	0.009	-	0	1
Married w/out Kids	0.116	-	0	1
Cohab. w/ Kids	0.083	-	0	1
Cohab. w/out Kids	0.108	-	0	1
Single w/ Kids	0.088	-	0	1
Single w/out Kids	0.323	-	0	1
Health Leave	0.014	-	0	1
Home Maker/Retired	0.051	-	0	1
Student	0.029	-	0	1
Unemployed	0.063	-	0	1
Military	0.022	-	0	1
Received Welfare	0.026	-	0	1
Parent(s) Received Welfare	0.091	-	0	1
Neighborhood Disadvantage	0.088	0.068	0	0.646
Parent(s) Occupation	3.112	1.688	0	5
Efficacy	3.791	0.739	1	5
Perceived SES	4.971	1.784	1	10
Depression	0.565	0.581	0	3
Economic Problems	0.524	1.136	0	6

‡ Weighted N: 14,742

Figure 1

Average Crime by Educational Mobility

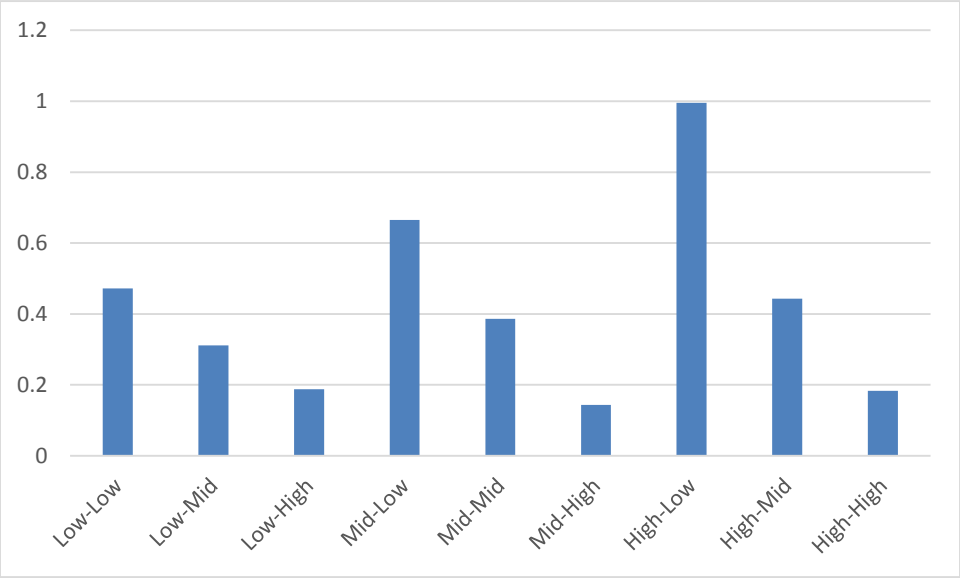

Table 3. Crime Regressed on Educational Mobility (Negative Binomial Models)‡

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Low-Low	.205	.046	-.022	-.153	-.161
	(.154)	(.155)	(.154)	(.152)	(.158)
Low-Mid	.073	.126	.188 †	.176 †	.221 †
	(.108)	(.106)	(.106)	(.105)	(.113)
Low-High	-.324	-.121	-.067	.143	.431
	(.294)	(.288)	(.294)	(.284)	(.297)
Mid-Low	.334 **	.235 *	.178 †	.027	-.063
	(.106)	(.108)	(.106)	(.105)	(.109)
Mid-High	-.730 ***	-.581 ***	-.565 ***	-.450 ***	-.454 ***
	(.104)	(.103)	(.103)	(.102)	(.111)
High-Low	.679 ***	.527 **	.421 *	.209	.081
	(.199)	(.121)	(.195)	(.189)	(.197)
High-Mid	.088	.113	.093	.081	.087
	(.073)	(.071)	(.071)	(.069)	(.073)
High-High	-.689 ***	-.577 ***	-.633 ***	-.504 ***	-.411 ***
	(.086)	(.085)	(.085)	(.084)	(.091)
Male	1.087 ***	0.938 ***	.911 ***	1.010 ***	1.095 ***
	(.052)	(.052)	(.057)	(.057)	(.061)
Age	-.011	-.602	-.509	-.491	-.245
	(.442)	(.435)	(.428)	(.423)	(.463)
Age^2	-.002	.008	.007	.006	.002
	(.007)	(.007)	(.007)	(.007)	(.008)
Black	.218 **	.210 **	.041	.001	-.038
	(.074)	(.073)	(.073)	(.072)	(.077)
Hispanic	.024	0.044	-.080	-.015	-.016
	(.08)	(.079)	(.079)	(.078)	(.082)
Asian	-.272 †	-.268 †	-357 *	-.304 *	-.264 †
	(.147)	(.144)	(.142)	(.139)	(.157)
American Indian	0.485 †	.150	.113	-.021	-.076
	(.270)	(.276)	(.273)	(.269)	(.281)
Other Race	-.453 †	-.280	-.442 †	-.422	-.276
	(.275)	(.267)	(.268)	(.264)	(.269)
Lived w/ Bio. Parents	-.311 ***	-.231 ***	-.195 ***	-.145 **	-.152 **
	(.054)	(.053)	(.053)	(.052)	(.055)
Parent(s) Occupation	.022	.017	.019	.025	.025
	(.019)	(.018)	(.018)	(.018)	(.019)
Neigh. Disadvantage	-.678	-.585	-.292	-.441	-.233
	(.446)	(.442)	(.435)	(.429)	(.461)
Parent(s) Welfare	.041	.001	.006	-.061	-.021
	(.096)	(.100)	(.097)	(.099)	(.092)

Table 3 Cont.

Delinquency		.124 ***	.123 ***	.116 ***	.112 ***
		(.008)	(.008)	(.007)	(.008)
Married w/ no Kid(s)			.297 **	.347 ***	.355 **
			(.104)	(.104)	(.109)
Cohab w/ Kid(s)			.751 ***	.633 ***	.565 ***
			(.099)	(.099)	(.105)
Cohab no Kid(s)			1.023 ***	1.058 ***	.990 ***
			(.091)	(.090)	(.095)
Single w/ Kid(s)			.986 ***	.845 ***	.758 ***
			(.103)	(.103)	(.111)
Single no Kid(s)			1.019 ***	1.037 ***	.928 ***
			(.072)	(.071)	(.076)
Health leave			.444 *	.291	.065
			(.205)	(.207)	(.226)
Student			.139	.061	.049
			(.145)	(.143)	(.151)
Retired/Homemaker			-.131	-.226	-.321 *
			(.147)	(.148)	(.161)
Military			-.442 *	-.359 *	-.418 *
			(.179)	(.175)	(.184)
Unemployed			.287 **	.154 †	-.004
			(.091)	(.089)	(.095)
Economic Problems				.241 ***	.192 ***
				(.020)	(.022)
Welfare				.333 ***	.276 ***
				(.062)	(.066)
Self-Efficacy					-.191 ***
					(.047)
Perceived SES					-.023
					(.016)
Depression					.266 ***
					(.057)
Intercept	.674	9.223	6.584	6.030	3.086
	(6.613)	(6.503)	(6.411)	(6.320)	(6.896)

† p < .1, * p < .05, ** p < .01, *** p < .001 N: 14,742

Note: Standard Errors in Parentheses

Table 4. Crime Regressed on Educational Mobility (Stratified by Achieved Education) ‡

	HS Degree or Less	**Some College**	**4 Yr. Degree+**
Variable	Model 1	Model 2	Model 3
Delinquency	0.089 ***	0.132 ***	0.160 ***
	(.017)	(.011)	(.023)
Mid-Low	0.161		
	(.168)		
High-Low	.545 *		
	(.237)		
Low-Mid		.084	
		(.106)	
High-Mid		.135 *	
		(.069)	
Low-High			0.569 †
			(.325)
Mid-High			.046
			(.122)

† p < .1, * p < .05, ** p < .01, *** p < .001

‡ Although not displayed, all models include demographic and economic controls from Wave I

Note: Standard Errors in Parentheses

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