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Gang Membership and Pathways to Maladaptive Parenting

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Abstract

A limited amount of research examines the short-term consequences of gang membership. Rarer, though, is the examination of more distal consequences of gang membership. This is unfortunate because it understates the true detrimental effect of gang membership across the life course, as well as the effects it may have on children of former gang members. Using data from the Rochester Youth Development Study, this work investigates the impact of gang membership in adolescence (ages 12-18) on a particularly problematic style of parenting, child maltreatment. Using discrete time survival analysis, this study finds that gang membership increases the likelihood of child maltreatment and this relationship is mediated by the more proximal outcomes of gang membership during adolescence, precocious transitions to adulthood.

Keywords

Gang Membership; Maltreatment; Life Course; Precocious Transitions

Recent empirical research has begun to use the life course perspective (Elder, 1974, 1997) and prospective longitudinal data to examine the impact of gang membership on later development. This research has demonstrated that gang members are responsible for a disproportionate share of both violent and non-violent crimes (Esbensen & Huizinga, 1993; Snyder & Sickmund, 2006; Thornberry et al., 2003) and that gang membership appears to facilitate this increased involvement in delinquency, especially more serious and violent forms of delinquency (Krohn & Thornberry, 2008). Gang membership is also associated with an increase in victimization, especially violent victimization (Decker & Pyrooz, 2010; Delisi et al., 2009; Taylor et al., 2007). Moreover, the use of prospective longitudinal data has allowed researchers to demonstrate that gang membership also has detrimental effects on life after one has left a gang (Curry & Decker, 1998; Hagedorn, 1998; Hill et al., 1996; Krohn, Lizotte & Perez, 1997; Levitt & Venkatesh, 2001; Thornberry et al., 2003). For instance, criminal activities, drug use and drug sales after a youth has left a gang remain

higher compared to those who were never gang members (Krohn et al., 2011; Krohn & Thornberry, 2008). The effects of gang membership are not limited to one's criminal behavior trajectory; in fact, the effects of gang membership impact multiple trajectories in the life course during adolescence, including a premature end to one's education, teenage pregnancy, and early parenthood (Curry & Decker, 1998; Hagedorn, 1998; Krohn et al., 1997; Levitt & Venkatesh, 2001; Melde & Esbensen, 2011; Newcomb & Bentler, 1988; Thornberry et al., 2003). More recent work has examined longer term adult outcomes, finding that gang involvement leads to economic and family problems, which, in turn are linked to increased levels of street crime and arrest in adulthood (Krohn et al., 2011).

Research has also demonstrated that street gangs provide a rich learning environment for violent and other antisocial behaviors and beliefs, reducing prosocial involvement and promoting non-normative behavior in both the short-term and long-term (Melde and Esbensen, 2011). Overall, membership in adolescent street gangs, even if only for a short time, appears to have a pervasive negative impact on an individual's subsequent development. While a growing body of literature has focused on the stunting impact of gang membership on adolescent development, there are several areas in which the impact of gang membership is quite understudied. One such area is the effect that gang membership eventually has on parenting behaviors. If gang membership increases antisocial and aggressive behavior in adolescence and creates disorder in the individual's life course, do these effects spill over to affect how the next generation is treated?

To examine this question we will focus on the link between gang membership and the most extreme form of maladaptive parenting behavior, child maltreatment. Maltreatment is typically defined to include physical abuse, sexual abuse, emotional abuse, and neglect (Leeb et al. 2008). The focus on maltreatment is important for several reasons. First, victims of maltreatment have significantly higher rates of subsequent violence, substance use, risky sexual behavior, internalizing and externalizing problem behavior, psychological trauma, conduct disorder, and delinquency (Gilbert et al., 2009; Egeland et al., 2002; Smith, Ireland & Thornberry, 2005; Stevenson, 1999; MacMillan, 2000; Widom, 1989). They are also more likely to perpetuate the cycle of maltreatment, engaging in maltreatment against the next generation when they become parents (Gabarino & Gilliam, 1980; Thornberry & Henry, 2012; Stith et al., 2009; Widom, 1989). Second, maltreatment is abhorrent in its own right and understanding the processes that lead to it is essential for developing effective prevention programs (CDC, 2002).

In many respects, the risk factors for gang membership also increase the likelihood of subsequent child maltreatment. For instance, ecological factors, material hardship, a history of victimization, parent-child relationships, school disengagement, and poor emotional health increase the likelihood of both gang membership and child maltreatment (Thornberry et al., 2003; Stith et al., 2009). However, we argue that more than just these common social antecedents account for the link between gang membership and this extreme form of antisocial parenting behavior. Indeed, we suggest that once these common antecedents are accounted for, the consequences of gang membership, including continued involvement in antisocial behavior and deviance as well as precocious transitions into adulthood, will both

promote child maltreatment and mediate the impact of adolescent gang membership on maltreatment.

We hypothesize that adolescent gang membership is a life event that increases the risk of child maltreatment on the next generation. More so, we hypothesize that there is a developmental pathway leading from gang membership to life-course disruptions, which further elevate the chances of child maltreatment. Taking into consideration the proximal consequences associated with gang membership, analyses are conducted to determine whether or not the effect of gang membership on child maltreatment is partially explained by precocious transitions and antisocial behavior in early adulthood.

Gang Membership and the Life Course

The life-course perspective focuses attention on behavioral patterns and changes in behavior that people engage in over the life span (Elder, 1998). It is premised on two important concepts: trajectories and transitions. Trajectories are age-graded patterns of behavior and development with respect to major social institutions such as family, school and work, and transitions are events in the life course that lead to movement along trajectories (Elder, 1997). Behavioral trajectories and transitions are not independent; they are interwoven, where behavioral patterns and events in one domain of the life course (e.g. school) are likely to influence other trajectories (e.g. work).

Adolescence is developmentally important to the life-course because it prepares youth to make behavioral transitions into adulthood that will enable them to become self-sufficient, prosocial individuals (Krohn et al., 1997). This is also a critical period in the life course where exposure to certain events (i.e. transitions) can have long term consequences on trajectories of behavior (see also Haynie et al.). It is also at this time that participation in street gangs reaches its peak (Howell, 1997). Within a life-course framework, joining a gang can be seen as a transition, which has deleterious effects across multiple trajectories throughout the life course. We propose that one's parenting behavior is not immune to the effects of gang membership.

To better understand why gang membership has detrimental effects across multiple behavioral trajectories including parenting, we draw upon the work of Hagan (1997) and the consequences of criminal embeddedness (see Krohn, 2011, for a similar argument). Hagan's (1997) work is based on two important concepts: human capital (“the skill and knowledge that individuals acquire through education and training” p. 235) and social capital (“the creation of capabilities through socially structured relations between individuals and groups” p. 235). Involvement in criminal groups, in this case participation in an adolescent street gang, inhibits the acquisition of human and social capital that helps one successfully transition from one stage of life to the next, specifically adolescence to adulthood.

The Short-term Effects of Gang Membership and the Pathway to Child Maltreatment

The normative order of life events is as follows: finish high school; depart from the household of one's family of origin; begin a full-time job; and then marriage and procreation of children (Hogan, 1978; Kamerman, 1981). Considered to be adolescent role exits, these events end the period in one's life where one is dependent on the family of origin, other guardians and society (Hagan & Foster, 2001). Research has demonstrated, though, that many adolescents do not follow this culturally expected pattern (Rindfuss, Swicegood & Rosenfeld, 1987) and "rush to adulthood" (Wickrama, Wickrama & Baltimore, 2010). Gang members are certainly no exception and often do not experience these role exits in a normative pattern; gang members and former gang members are more likely to prematurely end their educational trajectory and drop out of high school (Curry & Decker, 1998; Hagedorn, 1998; Hill et al., 1996; Moore, 1991; Thornberry et al., 2003), leave one's parental home and cohabit with a romantic partner or marry during adolescence (Thornberry et al., 2003), and experience parenthood as a teenager (Hagedorn, 1998; Moore, 1991; Thornberry, Smith & Howard, 1997). These off-time transitions or precocious role exits, exemplify disorder in the life course and lead to antisocial behavior in early and middle adulthood due to an insufficient acquisition of human and social capital (Krohn, Lizotte & Perez 1997). If gang members have substantial deficits in human and social capital as they enter adulthood, it is likely to impact multiple domains including the ability to be good parents and caretakers.

Failing to graduate from high school is not only a consequence of gang membership (Curry & Decker, 1998; Hagedorn, 1998; Pyrooz & Decker, 2011; Thornberry et al., 2003), but it is also a robust predictor of child maltreatment (Allwood & Widom, 2013; Brown et al., 1998; Cox, Kotch & Everson, 2003; Kotch et al., 1995; Kotch et al., 1999; Stith et al., 2009; Thornberry et al. 2013). Dropping out of high school severely limits the acquisition of the human and social capital needed to become a successful parent by limiting the acquisition of skills and qualifications necessary to secure stable employment so that one can provide for his or her family, as evidenced by higher unemployment rates and lower average incomes among high school dropouts (Coleman, 1988; U.S. Bureau of Census, 2005; U.S. Department of Labor, 2004). It also cuts an individual off from prosocial attachments such as teachers and conventional peers from whom an individual can draw social support and guidance (Croninger and Lee, 2001) while decreasing the likelihood of adequate social and personal adjustment (McCaul et al., 1992; Rumberger, 1987). Parenthood requires knowledge, skills and social support networks that enable an individual to cope with the day to day stressors associated with parenting. High school dropouts often do not have these resources from which to draw upon, consequently, increasing the risk for the perpetration of maltreatment (Epstein, 2010).

Those who participated in adolescent street gangs are also more likely to experience early cohabitation. Although living with a romantic partner prior to marriage has become more normative, cohabitation at an early age is still wrought with challenges that promote an environment where child maltreatment can flourish. Cohabitation with a romantic partner,

itself, increases the risk for the perpetration of child maltreatment (Brayden et al., 1992; Chaffin, Kelleher & Hollenberg, 1996). It is also predictive of relationship instability and dissatisfaction and increases the likelihood of later divorce (Amato et al., 2007; Schoen, Landale & Daniels, 2007). All of these factors are also known to increase the likelihood of child maltreatment (Stith et al., 2009). Frequent partner changes, which is a characteristic of early cohabitation, introduce instability into a household adding to family and parenting stress, and it leads to children living in a home with an adult other than a biological parent, further increasing the likelihood of maltreatment by both the biological parent and the other caregiver (Bae, Solomon & Gelles, 2009; Brown et al., 1998; Stith et al., 2009).

Buchholz and Korn-Burszytn (1993) argue that teenage parenthood is related to a multitude of factors that increase the likelihood of maltreatment such as low economic status, parenting stress, isolation from prosocial institutions and social support networks, and knowledge of child development. Gang members are more likely than other adolescents to become pregnant and experience teenage parenthood, and a young parental age increases the risk for perpetration of maltreatment (Brown et al., 1998; Chaffin et al., 1996, Connely & Straus, 1992; Cox, Kotch & Everson, 2003). Pregnancy during one's teen years is often unplanned and occurs before a person has acquired the financial and support networks, knowledge, and patience necessary to be a parent. Consequently, deficits in human and social capital associated with parenthood during adolescence further impede the ability of teenage parents to cope with the daily problems and stressors of both parenting and adulthood, further increasing the likelihood of child maltreatment.

We also argue that the effect of gang membership on antisocial behavior during emerging adulthood is important in the explanation of the link between gang membership and child maltreatment. Gang members not only have higher levels of drug use and drug sales while in a gang but their drug activity remains substantially higher than average upon leaving the gang (Hill et al., 1996; Thornberry et al., 2003). Drug use and abuse has the potential to affect many trajectories across the life course given that it disrupts cognitive function and siphons money away from the acquisition of resources like food and clothing. With regard to parenting, drug use increases the likelihood of child maltreatment even when controlling for alcohol use, other forms of antisocial behavior and offender temperamental characteristics (Brayden et al., 1992; Chaffin et al., 1996). Many gang members also continue to be involved in delinquent and criminal behavior even after participation or association with a gang has ceased (Gatti et al., 2005; Krohn et al., 2011). The continued involvement in the violent world of crime, as both perpetrator and victim, perpetuates the notion that violent behavior is an acceptable way to manage one's life circumstances. Moreover, the situational strain that results from criminal behavior can harm one's familial and social relationships and lead to deficits in social capital and strain (Hagan, 1997) increasing the likelihood of maltreatment (Zolotar & Runyan, 2006). There is some evidence to support this position with a few studies on the etiology of child maltreatment finding that involvement in criminal activity increases the risk of maltreatment among parents (Altemeier et al., 1982; Starr, 1982).

Current Study

The first aim of this study is to determine whether or not gang membership serves as a risk factor for child maltreatment while controlling for selection factors that predict both gang membership and maltreatment perpetration. The second goal is to examine whether or not the consequences of gang membership, including dropping out of high school, teenage parenthood, precocious cohabitation, criminal behavior and drug use, serve as developmental processes that further increase the risk of child maltreatment among former gang members and mediate the direct effect of gang membership.

Data and Methods

Data

The data for this study come from the Rochester Youth Development Study (RYDS), a multiwave panel study analyzing the development of delinquency and drug use in a high-risk sample of adolescents (n=1,000). Data collection began in 1988 when members of the sample were either in 7th or 8th grade (average age 14). A total of 14 waves of data have been collected during the course of three phases of data collection. The first phase of data collection (Phase 1) covered adolescence, from 14 to 18 years of age. During Phase 1, each respondent was interviewed nine times (waves 1-9) and their parents were interviewed eight times at six month intervals. Phase 2 began after a 2.5 year gap in the data collection. The respondents and their parents were interviewed at three annual intervals (average age 21-23). Phase 3, waves 13 and 14, consists of respondent interviews at age 29 and 31 years of age. Official data were also collected from schools, the police and social services.

Sample

The RYDS sample was designed to oversample youth who were at a high risk for serious delinquency and drug use because the base rates for these behaviors are relatively low (Elliott, Huizinga & Menard, 1989; Wolfgang, Thornberry & Figlio, 1987). The target population was seventh and eighth-grade students in the public school system of Rochester, NY, a city that has a diverse population and a high crime rate. The sample was then stratified on two dimensions. First, males were oversampled (75% versus 25%) because they are more likely than females to be chronic offenders and engage in serious forms of delinquency (Blumstein et al., 1986). Second, students from areas of the city where large populations of adult offenders lived were oversampled on the premise that youth residing in these areas are at a greater risk for offending. To identify high arrest rate areas, 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. The stratifying variables are included as covariates in all the models estimated below.

This analysis covers the entire period of data collection (Phases 1-3). The attrition rate in the RYDS data has been acceptable. By Phase 3, over 80% of the original sample had been retained. An examination of the effects of attrition through Phase 3 confirms that attrition does not create significant bias in the key variables used in this analysis.

This work looks specifically at a subset of this sample for whom there is information available on maltreatment from the Office of Child and Family Services in the State of New York (OCFS; N = 816). Among these respondents, we further limited the sample to only those individuals who were parents or guardians. We limited the sample in two ways. First, beginning in wave 4, female respondents were asked whether or not they had given birth in the past. Beginning in wave 5, both males and females were asked whether or not they had given birth/had a female give birth to their child since the date of the last interview. If the respondent answered any of these questions in the affirmative, then he or she was coded as being a parent. Second, beginning in wave 8, each respondent was asked how many children he or she had including biological and adopted children as well as whether or not he or she had a partner with a child under the age of 18. If a respondent indicated that he or she had a biological/adopted child or had a partner with a child, then he or she was denoted as a parent or guardian to a child. Eighty-five percent of the sample were parents or guardians at some point during the time in question (N = 696) and are available for analysis.

Measures

Maltreatment Perpetration—Our measure of maltreatment perpetration, covering age 18 to approximately age 38, includes physical abuse, sexual abuse, emotional abuse and neglect (Child Abuse Prevention and Treatment Act, 1974). Information was collected from Child Protective Services (CPS) records at the New York State Office of Children and Family Services (OCFS) through 2010 on all substantiated incidents in which a respondent was named as the perpetrator of any type of child maltreatment. Nevertheless, there is some right censoring in the measure. We know either the age that each participant experienced his or her first substantiated case of maltreatment or, if none, the age at the last available year of observation (i.e., the age at right censoring). For 59% of the sample, this is their age in 2010 when records were last collected, but for some it represents the age at the last year we have consent to collect data or when they moved out of New York State. Subsequent analyses revealed that movement out of state did not bias our results regarding maltreatment perpetration given that those who moved out of state were less likely to have risk factors for maltreatment compared to those who remained in New York. The average age of last coverage is 33.2; eighty-five percent of the sample was at least 30 years of age at that point and the oldest respondents were 38. Therefore, a considerable portion of the early adult life course is covered, from age 18 to average age 33, or 17 years of exposure. Approximately 14% of the sample for this investigation had a substantiated case of maltreatment during this period. Our measure of maltreatment is the age of first incident of maltreatment, if any incident occurred.

Gang Membership—Beginning in wave 2, respondents were asked if he or she was a member of a “street gang or posse”. Previous work has found that the single self-report question asking the respondents if they were in a gang is a valid indicator of gang membership (Esbensen et al., 2001) and, in the Rochester study, it results in an almost identical list of gang members as measures based on other selection criteria, such as the size or name of the gang (Thornberry et al., 1993). This self-report indicator of gang membership has high predictive validity, as gang membership is strongly related to serious, violent delinquency, drug use and sales, and gun carrying (Thornberry et al., 2003). Relying upon

the justification of Esbensen et al. (2001), we use a binary variable to measure gang membership that was constructed using self-report answers from waves 2-9. Each adolescent was asked whether or not he or she had ever been in a gang prior to the wave 2 interview and, at each subsequent interview from waves 3-9, whether he or she was in a gang since the date of the last interview. If the adolescent answered yes at least once to any of these questions, then he or she was given a score of 1 and 0 if they had never been in a gang. Thirty-four percent of the respondents in this analysis were a gang member at some point during adolescence.

Few respondents were gang members after wave 9; only 1.6% of the sample (n=14) reported participation in a gang after wave 9. If a respondent joined the gang for the first time after the wave 9 interview, then he or she is excluded from our analysis because causal ordering is an issue. This resulted in 3 respondents being dropped from the sample.

Disorderly Transitions—We also seek to determine whether or not the causal pathway between gang membership and perpetration of maltreatment is mediated by the following disorderly transitions in the life course: dropping out of high school, teenage parenthood, and precocious cohabitation. We measure *High School Dropout* as a binary variable indicating whether or not the respondent self-reported dropping out of high school before graduation. Also, if the respondent indicated that he or she was not in high school and had not graduated from high school by wave 10, then he or she was given a value of a 1 indicating that he or she dropped out of high school. Approximately 26% of the sample did not graduate from high school. *Teenage Parenthood* is a binary variable that indicates whether or not the adolescent self-reported that he or she had a child prior to his or her 20th birthday. In wave 4, each female respondent was asked whether or not she had given birth. If she answered yes, then she was given a score of 1 for this variable. Beginning in wave 5, both males and females were asked whether or not they had given birth/had a female give birth to their child since the last interview. If the respondent answered yes to this question at any time between waves 5 and 9, then he or she was given a value of 1 for the teenage parent variable. In this sample, over 37% of the respondents indicated that they had become a parent during their teen years. *Precocious Cohabitation* is a binary variable that indicates whether or not a respondent self-reported living with a romantic partner before the age of 19. Beginning in wave 6, each respondent was asked whether or not he or she lived with a romantic partner since the date of the last interview. If the respondent self-reported that he or she lived with a romantic partner at any time between waves 6 and 9 then he or she was given a score of 1 indicating precocious cohabitation. A little over 26% of the sample was cohabiting at some point during the time period under consideration. Subsequent analyses were performed in order to ensure temporal ordering between gang membership and precocious transitions to adulthood. Results reveal that causal ordering is not an issue for this analysis.

We also investigate whether antisocial behavior during emerging adulthood helps to explain the developmental processes leading to maltreatment. In wave 10, respondents were asked questions about their involvement in 28 nonoverlapping criminal behaviors ranging from vandalism and minor property crimes to serious violent and property crimes such as robbery. For each of these questions the respondent was asked whether or not he or she had engaged

in the behavior since the last interview (generally covering the period between 19-21). *Early Adulthood Criminal Behavior* is a binary measure indicating whether or not the respondent engaged in any criminal behaviors during the time period in question. This prevalence measure indicates that 39% of our sample was involved in some form of criminal behavior during this transition period to adulthood. *Early Adulthood Drug Use* is based on a drug use index asked in wave 10 which measures the respondent's use of 10 different substances ranging from marijuana to harder drugs such as crack and heroin since the date of the last interview (generally covering the period between 19-21). For each of the questions, the respondent was asked whether or not he or she had used the substances. This variable is a binary measure indicating whether or not the respondent used drugs at least once during the time period in question. Fifty-one percent of the sample indicated that they had used an illicit drug during this time period.

As the number of risk factors for child maltreatment increase, the likelihood of child maltreatment increases dramatically (Brown et al., 1998; MacMillan, 2000). Therefore, a count variable of the number of precocious transitions and antisocial behaviors that serve as risk factors for child maltreatment is included in this analysis. The total number of transitions ranges from 0-5 (e.g. high school dropout, teenage parenthood, precocious cohabitation, criminal activity during emerging adulthood, and drug use during emerging adulthood) with a mean of 1.5 (s.d. = 1.4).

Control Variables—Because there are several potential variables that may predict both gang membership and child maltreatment, we also control these additional risk factors to determine if the expected relationship between gang membership and child maltreatment is spurious. The first control variable is related to environmental factors. We include a control variable for neighborhood *Community Arrest Rate* which is constructed from Rochester police data. It refers to the percentage of the total population in the respondent's census tract that was arrested in 1986. The following variables refer specifically to the family environment. *Poverty Level* was measured at wave 1 and it is a dichotomous variable indicating whether the family income falls below the federally-defined poverty level for a given family size. *Parent Education* refers to the highest grade completed by the principal family wage-earner, and it ranges from 6 to 13-plus years.

The next set of control variables taps into each respondent's relationship with his or her family. We include a binary variable indicating whether or not each RYDS subject was a *Victim of Maltreatment*. This binary measure is constructed from New York's Office of Child and Family Services' reports of official substantiated incidents of any type of child maltreatment occurring before the age of 12. This includes neglect, physical abuse and sexual abuse. We also include two variables describing the level of attachment between each respondent and his or her parents. *Parent Attachment to Child* is a scale based on an 11-item adaptation of the Hudson Scale of Attitudes of Parents containing questions on the degree of warmth and lack of hostility in the parent child relationship (Hudson, 1982). Response choices are on a four-point scale ranging from 1 to 4 with 4 indicating higher levels of attachment. *Child Attachment to Parents* is based on an 11-item adaptation of the Hudson Scale of Attitudes to Parents (Hudson, 1982). Once again, responses range from 1-4 with 4 indicating higher levels of attachment.

Control variables representing the temperament and early delinquent behavior of the respondent are also included in this analysis. *Aggression* is a trimmed version of the aggression subscale of the Child Behavior Checklist (Achenbach, 1991) asked in wave 3. Each parent or guardian of the respondent was asked 12 questions about how often (always, sometimes or never) the adolescent engaged in behaviors such as being restless, hyperactive and getting into fights. The average of the responses was used to create the measure. Our measure of *Depression* is based on a modified version of the Depression Scale CES-D (Radloff, 1977) asked in wave 2. Each respondent was asked 14 questions regarding how often they experienced depressive symptoms such as feeling sad, anxious, and stressed on a four-point scale ranging from “never” to “often”. The measure is the average of the responses.. We also control for the *Delinquent Behavior* of the respondent during early adolescence by using an incidence measure of *General Delinquency* taken from wave 1 of data collection. This variable is constructed from 32 self-reported, nonoverlapping items covering a range of delinquent behaviors from status offenses, vandalism and minor property crimes to serious violent and property crimes. For each of these questions the respondent was asked whether or not he or she engaged in the behavior. This variable is a count measure of the number of delinquent behaviors in which the adolescent engaged in the year prior to the wave 1 interview. Finally, demographic variables (*Male, Black, and Hispanic*) are included as control variables.

In order to appropriately handle missing data, we employ multiple imputation using the PROC MI procedure in SAS, Version 9.2. We limited the imputation to the 816 respondents for whom we had consent to collect data on child maltreatment from OCFS. The dependent variable, gang membership, the disorderly transitions into adulthood, all of the control variables and 60 auxiliary variables taken from early adolescence (wave 1-2) and late adolescence (wave 7-8) were included in the multiple imputation models. Twenty imputed data sets were created. The results from each imputation were then limited to those respondents who were “parents” and then all of the data sets were combined using the PROC MIANALYZE procedure in SAS, Version 9.2, adhering to Rubin's (1987) rules for deriving final estimates and standard errors. Analyses were also replicated using the entire sample of RYDS respondents (N=1,000) for multiple imputation. The results were substantively similar to those reported in the results section.

Method

Recall that our dependent variable, child maltreatment, has some right-censoring. Consequently, we employ Discrete Time Series Analysis (DTSA; Singer & Willett, 2003) to model the onset of maltreatment perpetration (i.e. the age of the respondent when he or she first had a substantiated case of child maltreatment). DTSA models are appropriate because they can account for the timing or onset of an event that is measured in discrete time periods (i.e. the age at the first instance of child maltreatment) as well as account for right-censoring in the outcome of interest (Singer & Willet, 2003). DTSA models were also selected because they allow for the examination of the effect of time-consistent predictors on the outcome of interest. Finally, DTSA models also allow for mediation analysis by testing pairs of nested models that differ only by a singular substantive predictor in order to determine significance of that predictor (Singer & Willet, 2003). Thus, we are able to investigate

whether or not the consequences of gang membership – dropping out of high school, teenage parenthood, precocious cohabitation, emerging adulthood criminal behavior, and drug use—mediate the effect of gang membership on child maltreatment.

Prior to analysis, we determined the best specification of the polynomial function using DTSA models. We tested a logarithmic model and three nested models: 1) intercept only, 2) linear growth, and 3) quadratic growth. After comparing the deviance statistic for each subsequent model it was determined that the quadratic model best fit the data (3.012, $p < .01$). Our subsequent analysis is as follows: first, we use a DTSA model to examine the relationship between gang membership and child maltreatment while controlling for other variables. We also examine the impact of selection effects by conducting a propensity score model, but it cannot be used for the subsequent mediation analysis. Finally, we examine the mediation effects by entering each precocious transition and deviant behavior into the base model, one-by-one, to determine whether or not these proximal consequences of gang membership significantly contribute to the model (through the reduction of the deviance statistic) and mediate the relationship between gang membership and child maltreatment. We then examine the cumulative impact of the proposed mediators by first including a count variable of the number of off-time transitions to the base model as well as including all 5 proposed mediators in the model to determine whether or not a relationship between gang membership and child maltreatment remains when accounting for all proximal consequences of gang membership.

Results

We begin by estimating a baseline DTSA model examining the effects of gang membership on subsequent child maltreatment. The results, controlling for several important covariates (see Table 3), confirm our hypothesis that gang membership serves as a risk factor for child maltreatment. Compared to those who never self-identified as a gang member, former gang members are significantly more likely to have a substantiated case of child maltreatment ($OR = 1.82, p < .01$).

Though not all of the control variables are statistically significant predictors of child maltreatment in the DTSA model, all are in the anticipated direction based on theory and previous research. Those that are significant, though, do not have a minimal effect on child maltreatment. For instance, being a victim of child maltreatment significantly increases the likelihood of committing an act of child maltreatment, making a respondent over 1.85 times more likely to maltreat a child. The model also indicates that those participants who experienced higher levels of parent attachment during early adolescence were less likely to subsequently maltreat a child ($OR = 0.58; p < .05$). This measure reflects the level of attachment from the participant's parent to the participant and is measure by parent reports at the wave 1 interview. Interestingly, a parallel measure of attachment, from the participant to the parent measured at the same time, is not statistically significant. Higher parental education levels are also associated with a lower likelihood of and child maltreatment ($OR = 0.90$), although this covariate just failed to achieve significance at the traditional alpha level of 0.05. Important to this analysis is the finding that the inclusion of these covariates does not render the relationship between gang membership and maltreatment spurious. To verify

this, we used propensity score models (PSM) to control for selection effects. First, we checked for covariate balance to determine if there were important preexisting differences between gang members and non-gang members across 32 different pretreatment selection variables in five domains: neighborhood characteristics; family demographics; parent-child relationships; school attachment; and childhood antisocial behavior. Next, we estimated a propensity score to create balance over the observable covariates for the 696 respondents enabling us to severely limit selection effects that are predictors of the gang membership and most likely confound the outcome of interest thereby allowing for causal inferences (Heckman, Ichimura & Todd, 1998; Rosenbaum, 2002). Using one-to-one nearest neighbor matching without replacement and within a caliper set at .01, we found that there is a significant effect of gang membership on child maltreatment, with former gang members being more likely to maltreat a child than those who never joined a gang ($p < .05$).

For brevity, we do not describe in detail the relationship between gang membership and the disorderly transitions and antisocial behavior in emerging adulthood that we examined as mediators. Previous results using the RYDS data (Thornberry et al., 1998; Thornberry et al., 2003) as well as results from other data sets (Curry & Decker, 1998; Hagedorn, 1998; Hill et al., 1996; Moore, 1991; Pyrooz & Decker, 2011) show that gang membership is significantly related to each of these disorderly transitions in the expected direction. Therefore, Table 4 only shows the bivariate relationships between gang membership and each potential mediating variable. Gang membership significantly increases the likelihood of each of the disorderly transitions into adulthood, controlling for gender and community arrest rate which are the stratifying variables within the sample. In fact, former gang members are approximately two times more likely to experience each of these off-time transitions (dropping out of high school, $OR = 2.60$, $p < .01$; teenage parenthood, $OR = 1.91$, $p < .01$; precocious cohabitation, $OR = 2.05$, $p < .01$) and display antisocial behavior during emerging adulthood (criminal involvement, $OR = 1.90$, $p < .01$; drug use, $OR = 2.88$, $p < .01$).

Table 5 looks at the proposed mediating factors between gang membership and subsequent child maltreatment. Model 1 demonstrates the relationship between gang membership and child maltreatment when dropping out of high school is added to our baseline model. Those who do not graduate from high school are nearly 2 times more likely to maltreat a child ($p > .01$). In addition, the effect of gang membership is slightly weakened by the inclusion of teenage parenthood in the model, although those who are gang members are still nearly 1.8 times more likely to have substantiated case child maltreatment. Model 2 depicts the relationship between gang membership, teenage parenthood and child maltreatment. Compared to those who did not have a child as a teenager, teenage parents are over 2 times more likely to maltreat a child ($p < .01$). In addition, the effect of gang membership is partially mediated by the inclusion of teenage parenthood in the model, an 18% reduction in the magnitude of the estimate, but it is still a significant predictor of child maltreatment. The inclusion of teenage cohabitation follows a similar pattern. Those who live with a partner during their teenage years are 3.7 times more likely to commit an act of child maltreatment ($p < .01$), and the inclusion of this variable also partially mediates the effect of gang membership on child maltreatment.

Model 4 demonstrates the effect of criminal behavior during emerging adulthood on child maltreatment. Contrary to literature which has found that criminality is related to child maltreatment, we do not find that self-reported criminal behavior significantly increases the risk of child maltreatment. However, its inclusion in the baseline model does partially mediate the effect of gang membership. Model 5 examines the effect of gang membership on child maltreatment when drug use is included in the model. Unlike prior literature examining risk factors for child maltreatment, drug use during emerging adulthood in this sample does not increase the risk of child maltreatment. In general, gang members are still over 1.7 times more likely to maltreat a child when controlling for criminal behavior and drug use during emerging adulthood, respectively.

To this point we have looked at the impact of each mediator separately. We close by examining the cumulative impact of precocious transitions and early adult antisocial behavior on child maltreatment (Models 6 and 7). In model 6, a count variable is added to the baseline model and demonstrates that each additional precocious transition or antisocial increases the likelihood of maltreatment by a factor of 1.6 ($p < .01$). The inclusion of this variable decreases the magnitude of the effect of gang membership by nearly a third and it is no longer significant at an alpha level of 0.05. In other words, the accumulation of more proximal consequences of gang membership mediates the effect of gang membership on child maltreatment. Model 7 includes all five of the transitions along with gang membership. Tests for multicollinearity revealed that it was not an issue. Accounting for each precocious transition and antisocial behavior in emerging adulthood, only gang membership and precocious cohabitation increase the risk of child maltreatment at the traditional alpha level of 0.05. Moreover, the size of the estimates is smaller than in previous models. Gang members are 1.61 times more likely to maltreat a child and those respondents who lived with a romantic partner during adolescence are 2.75 times more likely to maltreat a child controlling for all other variables of interest. Consequently, it seems as though the negative effect of gang membership operates primarily precocious cohabitation, yet gang membership still remains a risk factor for maltreatment in and of itself. We also reran this last model without criminal activity and drug use during emerging adulthood (results not shown). Both gang membership and precocious cohabitation significantly increased the likelihood of child maltreatment but unlike the aforementioned model, teenage parenthood also increased the likelihood of child maltreatment ($OR = 1.68, p < .05$).

Discussion and Conclusion

Gang membership serves as a powerful force within the lives of youth and dominates many aspects of their development (Moore, 1991). Involvement in this “way of life”, even for a short time, can have profound effects on the behaviors and attitudes of current and former gang members and serves as an important event in the life course that has pervasive effects across multiple domains of development. Even though gang members may attempt to sever “the ties that bind” them to a gang (Pyrooz, Decker & Webb, 2010), there are numerous consequences of gang membership that spill over into other areas of one's life and appear to persist over long portions of the life span. This study extends the examination of the reach of gang membership to investigate its impact on subsequent parenting behavior. We found that gang membership is related to the most extreme form of negative parenting, child

maltreatment, and that the short-term consequences of gang membership, in particular dropping out of high school, teenage parenthood and precocious cohabitation, mediate some of the relationship between gang membership and child maltreatment. Important, though, is the finding that even when controlling for more proximal consequences of gang membership (as well as a number of prior risk factors for both gang membership and maltreatment), gang membership still has a direct relationship with child maltreatment. Given these findings, three points guide our discussion.

First, these findings reaffirm the importance of the life course perspective both in the study of gang membership and the etiology of child maltreatment. Trajectories of behavior and development are not immune from the consequences of early life decisions in adolescence; instead, the costs of these decisions permeate into multiple domains of one's life truly reinforcing the idea of interdependence between trajectories of behavior and development. It also substantiates the arguments that decisions made during adolescence, in this case deciding to join a gang, have lasting effects.

The second point guiding our discussion is the importance of gang membership in the facilitation of “fragile families.” This is particularly significant given what this means for those interested in preventing maltreatment. The term “fragile families” describes family arrangements that lead to greater risks for economic insecurity and relationship instability which promote poor family functioning (McLanahan et al., 2010: 3). Two of our off-time transitions to adulthood, teenage pregnancy and precocious cohabitation, are indicators of fragile family living situations, and we have found that experiencing both of these off-time transitions to adulthood increases the risk for child maltreatment. Participation in a gang sets off a pattern of instability in relationships over time, as exemplified by precocious cohabitation, in which an individual is much more likely to experience multiple changes in partners and living situations as well as relationship instability (Schoen, Landale & Daniels, 2007; Smock, 2000). This instability, in turn, affects one's relationship with a child promoting an unstable home life where child maltreatment can occur (Stith et al., 2009; Manning, Smock & Majumdar, 2004; Raley & Wildsmith, 2004). Precocious cohabitation can also affect the economic and physical health of adults and children by adding strain to the family life, increasing the likelihood of poor relationship quality and depression, further creating an atmosphere where maltreatment may occur (Wickrama, Wickrama & Baltimore, 2010). Instability also occurs in the form of teenage parenthood since adolescents often become parents before they have finished their education, procured stable employment, and have gotten married. Children of adolescents are typically born into fragile families headed by young, unmarried, and underemployed parents who often have trouble providing a stable home life where the necessary resources are provided for a child (McLanahan et al., 2010). Those who wish to prevent the onset of child maltreatment should focus maltreatment prevention programs on those parents who experience these early transitions into adulthood in order to promote stability within the family, prosocial family functioning and provide means for economic support.

Third, this work is interesting given that lack of a relationship between antisocial behavior in emerging adulthood and child maltreatment. Contrary to prior work, we did not find that either criminal behavior or drug use during emerging adulthood significantly increased the

likelihood of child maltreatment. Prior literature that has found a link between these two behaviors is older and based on retrospective reports of parent behavior. Our work, on the other hand, is based on prospective longitudinal data with self-report information on involvement in criminal activities among potential perpetrators. More curious though is the null finding regarding the relationship between drug use and child maltreatment. We attempt to account for these divergent results in two ways. First, prior literature examining the relationship between parental drug use and child maltreatment has focused on persistent and serious drug use, which is more likely to interfere with day to day functioning in a variety of areas such as financial stability, family formation, and importantly, parent-child relationships (Barnard & McKeganey, 2004; Newcomb & Bentler, 1988). Subsequent analyses in the RYDS data revealed that the most common drug used during emerging adulthood is marijuana. Perhaps the “high” associated with marijuana use is not as likely to generate erratic parenting behavior or parental responses to child behavior that include maltreatment. Marijuana use is also an aspect of antisocial behavior that is less likely to lead to dramatic mood swings or dissociative psychological states that have long term consequences on parent-child relations. It is also not as addictive. Also noteworthy is the finding of higher correlations between drug use and the precocious transitions that are related to child maltreatment than between drug use and child maltreatment (see Appendix A). Therefore, as with child maltreatment, drug use may be a consequence of gang membership and precocious transitions to adulthood and the relationship between drug use and maltreatment in other work may actually be spurious.

As with all research, this study is not without its limitations. We are limited in our investigation due to the nature of the outcome variable, child maltreatment. First, only substantiated cases of maltreatment from CPS records are available in the Rochester data set. Although official measures of maltreatment have demonstrated reliability and validity (Cicchetti & Barnett, 1991; Widom, Raphael, & DuMont, 2004), they are likely to underestimate the level of maltreatment and be subject to biases that may exist in official reporting and recording procedures. Second, within our maltreatment data there is right censoring. Thus, we do not have the full information of substantiated acts of maltreatment for all of the respondents through 38 years of age. Consequently, there is the potential for some of the respondents to have committed an act of child maltreatment after the last year of available data collection for CPS records. If so, this would lead to a conservative bias in our test of the core hypothesis. Our outcome variable also limits our investigation by restricting our analyses of offender characteristics to adolescence and early adulthood only. We are not able to investigate the relationship between offender characteristics and child maltreatment at the specific time of the incident. However, this does serve to strengthen our work by ensuring temporal ordering regarding the risk factor and the perpetration of child maltreatment. It should also be noted that we are only looking at earlier pathways to maltreatment perpetration and by doing so we are not taking into consideration other domains of risk that are relevant to the study of child maltreatment including offender-child relationship information, child characteristics and situational characteristics (Belsky, 1990; Stith et al., 2009).

Finally, we did not attempt to look at how gang membership and the consequences of gang membership may lead to different types and severity of maltreatment. Given the limited

information we have regarding the type of maltreatment that occurred and the small sample sizes, we are unable to investigate the relationship between gang membership and the type of child maltreatment that occurs, but subsequent inquiries are worth further investigation. For instance, it is possible that the violent nature of the gang increases the risk for physical maltreatment compared to emotional abuse or neglect through the development and reinforcement of norms supportive of violence. In addition, it would also be worthwhile to see if the accumulation of risk factors for maltreatment has any effect on the severity or duration of child maltreatment. This too would benefit the prevention and treatment community who seek to minimize the prevalence and severity of maltreatment in our society.

In the end, this work speaks to the importance of studying the effects of gang membership across the life course and further demonstrates the need to analyze the consequences of gang membership in multiple life domains or trajectories. It also speaks to the importance of looking at the early life experiences of those who commit acts of child maltreatment in order to fully understand and prevent child maltreatment, which has innumerable consequences to victims and is a financial burden to society.

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Appendix A: Pearson Correlation Coefficients and Significance between Main Variables of Interest

	1.	2.	3.	4.	5.	6.	7.
Maltreatment	-	-	-	-	-	-	-
Gang Membership	0.151 **	-	-	-	-	-	-
High School Dropout	0.165 **	0.206 **	-	-	-	-	-
Teenage Parenthood	0.206 **	0.140 **	0.222 **	-	-	-	-
Precocious Cohabitation	0.171 **	0.153 **	0.271 **	0.339 **	-	-	-
Emerging Adulthood Criminal Activity	0.077 *	0.149 **	0.076 *	0.038	0.004	-	-
Emerging Adulthood Drug Use	0.119 **	0.239 **	0.163 **	0.117 **	0.130 **	0.360 **	-

* p < .05

** p < .01

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Table 1
Description of Maltreatment Perpetration (N=102)

<u>Average Age at First Incident</u>	27.147
<u>Total Number of Incidents</u>	<u>Number of Respondents</u>
1	74 (72.5%)
2	10 (9.8%)
3+	18 (17.6%)
<u>Type of Maltreatment Perpetrated^{ab}</u>	
Neglect	93 (91.2%)
Physical Abuse	34 (33.3%)
Sexual Abuse	23 (22.5%)
Other	13 (12.7%)

^a Respondents may have engaged in multiple forms of child abuse; thus, there is some double counting regarding the types of maltreatment.

^b New York's OCFS (Office of Child and Family Services) does not use emotional abuse as a classification for child maltreatment.

Table 2
Descriptive Statistics

VARIABLE	N	Mean	Standard Deviation	Range
Child Maltreatment Perpetration	816	0.125*	-	0-1
Gang Membership	865	0.340*	-	0-1
Access to Child	1000	0.731	-	0-1
High School Drop Out	880	0.268*	-	0-1
Teenage Parenthood	997	0.291*	-	0-1
Precocious Cohabitation	862	0.102*	-	0-1
Emerging Adulthood Criminal Activity	855	0.402*	-	0-1
Emerging Adulthood Drug Use	833	0.509*	-	0-1
Number of Precocious Transitions	1000	1.382	1.317	0-5
Male	1000	0.729*	-	0-1
Black	1000	0.680*	-	0-1
Hispanic	1000	0.170*	-	0-1
Poverty Level	890	0.316*	-	0-1
Parent Education Level	992	11.351	2.146	6-18
Community Arrest Rate	1000	4.193	2.071	0.120-7.870
History of Maltreatment	1000	0.198*	-	0-1
Delinquency	956	7.911	22.451	0-250
Aggression	899	0.456	0.356	0-1.833
Depression	946	2.132	0.456	1-3.786
Attachment to Parents	947	3.401	0.445	1.181-4
Parent Attachment	973	3.421	0.422	1.454-4

All descriptive statistics are reported prior to multiple imputation.

* Indicated variables are binary; the mean represents the proportion of the sample that had the characteristic indicated by the variable.

Table 3
Discrete Time Survival Analysis of the Effects of Gang Membership on Child Maltreatment

	β (SE)	Odds Ratio	95% Confidence Interval
Gang Membership	0.601 (0.224)	1.824**	(1.174-2.834)
Male	-0.133 (0.240)	0.876	(0.547-1.403)
Black	0.800 (0.489)	2.225	(0.853-5.803)
Hispanic	0.216 (0.574)	1.242	(0.403-3.829)
Poverty Level	0.027 (0.230)	1.028	(0.654-1.614)
Parent Education Level	-0.107 (0.059)	0.899 ^T	(0.800-1.009)
Community Arrest Rate	-0.020 (0.057)	0.981	(0.877-1.096)
History of Maltreatment	0.616 (0.244)	1.852**	(1.148-2.986)
Adolescent Delinquency	-0.000 (0.004)	0.999	(0.991-1.008)
Aggression	0.331 (0.308)	1.394	(0.763-2.547)
Depression	0.216 (0.243)	1.241	(0.771-1.998)
Attachment to Parents	0.116 (0.239)	1.123	(0.703-1.795)
Parent Attachment	-0.540 (0.263)	0.583*	(0.348-0.975)

^T
 $p < .10$ (two-tailed test)

*
 $p < .05$ (two-tailed test)

**
 $p < .01$ (two-tailed test)

Table 4
Logistic Regression Examining the Relationship between Gang Membership and Disorderly Events in the Life Course

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β (SE)	OR	β (SE)	OR	β (SE)	OR	β (SE)	OR	β (SE)	OR
High School Dropout	0.954 (0.252)	2.596**	-	-	-	-	-	-	-	-
Teenage Parenthood	-	-	0.647 (0.156)	1.905**	-	-	-	-	-	-
Precocious Cohabitation	-	-	-	-	0.718 (0.171)	2.051**	-	-	-	-
Emerging Adulthood Criminal Activity	-	-	-	-	-	-	0.641 (0.175)	1.898**	-	-
Emerging Adulthood Drug Use	-	-	-	-	-	-	-	-	1.056 (0.162)	2.875**

All models control for gender and community arrest rate.

* p < .05 (two-tailed test)

** p < .01 (two-tailed test)

Table 5
Discrete Time Survival Analysis of the Effects of Gang Membership on Child Maltreatment with Potential Mediating Factors

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	β (SE)	OR	β (SE)	OR	β (SE)	OR	β (SE)	OR	β (SE)	OR	β (SE)	OR	β (SE)	OR
Gang Membership	0.584 (0.223)	1.795 ^{***}	0.496 (0.228)	1.643 [*]	0.547 (0.226)	1.729 [*]	0.571 (0.229)	1.771 [*]	0.544 (0.227)	1.771 [*]	0.408 (0.230)	1.503 ^T	0.475 (0.232)	1.608 [*]
High School Dropout	0.658 (0.224)	1.931 ^{***}	-	-	-	-	-	-	-	-	-	-	0.392 (0.240)	1.480
Teenage Parenthood	-	-	0.730 (0.230)	2.076 ^{**}	-	-	-	-	-	-	-	-	0.431 (0.248)	1.538 ^T
Precocious Cohabitation	-	-	-	-	1.313 (0.264)	3.717 ^{**}	-	-	-	-	-	-	1.012 (0.284)	2.750 ^{**}
Emerging Adulthood Criminality	-	-	-	-	-	-	0.181 (0.232)	1.198	-	-	-	-	0.016 (0.242)	1.016
Emerging Adulthood Drug Use	-	-	-	-	-	-	-	-	0.373 (0.243)	1.452	-	-	0.165 (0.251)	1.179
Number of Transitions	-	-	-	-	-	-	-	-	-	-	0.470 (0.104)	1.601 ^{**}	-	-

All models control for the following variables: male, black, Hispanic, community arrest rate, poverty level, parent education, history of child abuse, adolescent delinquency, aggression, depression, attachment to parents and parent attachment to respondent.

^T $p < .10$ (two-tailed test)

^{*} $p < .05$ (two-tailed test)

^{**} $p < .01$ (two-tailed test)