Published in final edited form as:

Addict Behav. 2016 September ; 60: 48–52. doi:10.1016/j.addbeh.2016.03.023.

Precocious transitions and long-term heroin use outcomes: A longitudinal study of gang-affiliated Mexican-American males

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Abstract

A longitudinal study (15 years) investigates heroin use patterns following precocious transition experiences for gang-affiliated Mexican-American males (n=119) in San Antonio, Texas. Five precocious transitions are examined: cohabitation, early nest leaving, school dropout, teenage parenthood, and unemployment (while not in school). Half of these men used heroin over the follow-up period for an average of under 4 years. Findings from a zero-inflated Poisson model indicate that while these transitions do not have a significant effect on initiation of heroin use, they do have an important influence on individual's drug trajectories once they have initiated. Early-nest leaving and teenage parenthood are protective factors for continued heroin use while dropping out of high school and cohabiting during this same period are risk factors. Findings are discussed within the context of these disadvantaged and marginalized communities.

Keywords

gangs; heroin use; drug trajectories; Mexican-Americans

1. Introduction

Dynamic life course processes are important for understanding crime and drug use trajectories (Sampson, & Laub, 2008; Sampson & Laub, 1993). Research has found that transitions and turning points in the life course contribute to the onset, stability, and change in these trajectories over time (Elder, 1998). The transition to adulthood from adolescence occurs in relatively age-graded stages in which an individual moves from one stage to another in an orderly trajectory (Caspi, Elder Jr, & Herbener, 1990). It is when transitions occur out of order that crime and drug use behaviors are more likely to result (Newcomb & Bentler, 1988). Precocious transitions are defined by early entry in adult roles such as early

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cohabitation, marriage, parenthood, and dropping out of school. A “rush to adulthood” creates a chronically stressful situation that places excessive demands (emotionally, socially, and financially) on adolescents that are ill-equipped for adult responsibilities (Wickrama, Conger, Wallace, & Elder Jr., 2003; Wickrama, Merten, & Elder Jr., 2005; Wickrama, Wickrama, & Baltimore, 2010). In other words, precocious transitions may force individuals into adult roles at an earlier age than they may be developmentally prepared, leading to a variety of adverse outcomes (Krohn, Lizotte, & Perez, 1997; Newcomb, 1996).

Precocious transitions have been linked to substance abuse (Carbone-Lopez & Miller, 2012; Krohn et al., 1997; Staff, Schulenberg, & Bachman, 2010), risky sexual behaviors (Bozick, 2006), and other adverse health outcomes (Wickrama et al., 2005; Wickrama et al., 2010). For example, Staff and colleagues (2010) found that alcohol, tobacco, marijuana, and cocaine use significantly increased as adolescents transitioned out of their parents’ home. This association remained strong when school and employment statuses were controlled. Precocious transitions have been characterized as contributing to the onset of deviant behavior and as a developmental consequence of early participation in deviance. For example, Haynie and colleagues (2009) examine whether exposure to direct and indirect violence during adolescence is associated with precocious role exits such as running away from home, dropping out of high school, having a child, attempting suicide, and criminal justice involvement. On the other hand, Carbone-Lopez and Miller (2012) examined the cumulative impact of early transitions into adult roles and the onset of methamphetamine use in a sample of women.

Precocious transitions have been found to be especially salient in the life course of adolescents involved in delinquent peer groups. Precocious transitions and associated behaviors limit the adolescent's contact with conventional peers, reducing engagement in other prosocial behaviors and encourages gang involvement and delinquent activity (Krohn, Ward, Thornberry, Lizotte, & Chu, 2011). Thornberry and colleagues (2003) examined adolescent gang members and identified five adolescent precocious transitions common for this group: school dropout, teenage parenthood, early-leave leaving, unemployment (for those not in school), and cohabitation. Following Thornberry's work, Valdez and colleagues (2005) found in a sample of Mexican-American adolescent gang members a positive and significant association between total precocious transitions and hard drug use. Unemployment, school dropout, and early-leave leaving were found to be significant risk factors that increased alcohol and illicit drug use during adolescence.

This article builds upon this previous work to examine the impact of precocious transitions on the onset of and continuation of heroin use into adulthood among a sample of young adult criminogenic Mexican-American men with histories of adolescent gang membership. This topic is significant for three reasons. First, heroin use has consistently been a major social and health problem among Mexican Americans and other Latinos (Valdez, 2005; Valdez & Kaplan, 2007; Valdez, Neaigus, Kaplan, & Cepeda, 2011). Research from treatment admissions shows that Latinos receiving substance abuse treatment are more likely to be treated for heroin use and referred to treatment by the criminal justice system than other ethnic groups (Reif, Horgan, & Ritter, 2008). Related, in the United States there has been a surge in heroin use and overdoses across the general population that has spurred

public health concern. Second, the men in this study were recruited from disadvantaged urban neighborhoods that are reflective of Mexican communities across the southwest (Massey, Durand, & Malone, 2003; Valdez & Cepeda, 2008). Research documents that living in a disadvantaged community is associated with an increased risk of precocious transitions as the environment confounds substance use and associated mental health symptoms (Wickrama et al., 2005). Third, gangs continue to be a major social issue in the United States, especially among Latino adolescents, with an estimated 760,000 active gang members (Egley & Ritz, 2006) and an eight percent cumulative prevalence of gang membership (Pyrooz, 2014). Criminal justice data suggest that Hispanics may also have a longer duration of gang membership (Egley, Howell, & Major, 2006; Sweeten, Pyrooz, & Piquero, 2013). Despite this, there is a paucity of research documenting the long-term consequences of gang membership (Decker, Melde, & Pyrooz, 2013). It is the objective of this study to fill these gaps in knowledge by determining the impact of adolescent precocious transitions on long-term heroin use outcomes for gang-involved Mexican-American men.

2. Methods

2.1 Study Design and Sampling

A longitudinal study was used to investigate heroin use patterns following precocious transition experiences in gang-affiliated Mexican-American males in San Antonio, Texas. This area is characterized by a high concentration of poverty, adult criminals, drug trafficking, delinquent behavior, and Mexican-American street gangs. The original study, conducted from 1996-1998, surveyed 151 Mexican-American males. A multi-stage stratified design was applied to select a random sample of individuals that were representative of 404 known Mexican-American gang members in this specific urban geographic area. Rosters of gang members were developed through ethnographic methods so that the study did not rely on school or police based samples or rosters. Structured questionnaires and in-depth interviews were used to collect information about role transitions and gang-related crime and violence. A detailed description of the sampling design has been presented in earlier articles (Author Cites).

The follow-up study, conducted from 2009-2012, relocated 94.7 percent of men from the original sample. Of those relocated, 83.2 percent were successfully enrolled for a final follow-up rate of 78.8 percent ($n = 119$). Sixteen men refused to participate in the follow-up study, 6 men were deceased, and 2 men were in federal prison. Subjects in Bexar County Jail or Texas Department of Criminal Justice were successfully enrolled in the study. Using an adapted version of the Natural History Interview (NHI) technique (Hser, David Huang, Chou, & Anglin, 2007; Hser, Hoffman, Grella, & Anglin, 2001), in-depth interviews were conducted and questionnaires were utilized to retrospectively collect substance use data from the initial interview to the current interview. Patterns of drug use, including heroin use, were documented.

Both studies were funded by the National Institutes of Health, National Institute on Drug Abuse and study protocols were approved by university Institutional Review Boards and Executive Services at the Texas Department of Criminal Justice.

2.2 Study Participants

The original study sample consisted of 161 male Mexican-American gang members ranging in age from 14 to 20 years with a mean age of 18.5 years old. The 119 men sampled at follow-up had an average age of 31. Approximately 35% of the follow-up sample earned a GED and 43% were employed full or part-time at the time of the follow-up interview. Fifty-three percent of the men were married or living with a stable partner, while 28% had never been married. Of the follow-up sample, 85% of the men had at least one child with 69% reporting at least some responsibility to support them. Seventy-eight percent of the men had been convicted of at least one felony. All of the men were U.S. born Mexican-origin with many having two U.S. born parents.

2.3 Study Variables

The focus of the analysis is on heroin use following precocious transitions experienced in adolescence by Mexican-American male gang members. Five binary precocious transitions are examined (Thornberry & Burch, 1997; Thornberry, Lizotte, Smith, & Tobin, 2003; Valdez et al., 2005) from the initial interview: cohabitation, early nest leaving, school dropout, teenage parenthood, and unemployment. Cohabitation is determined by whether the respondent was living with a spouse, common law partner or girlfriend at the time of the interview. Respondents were coded as leaving the nest early if they had involuntarily left their guardian's home or had run away. School dropout was coded if the respondent reported dropping out of school regardless if they acquired their GED or high school equivalency later. Unemployment indicated that the respondent was not in school and unemployed at the time of the original interview. If they were currently attending school, they were coded as employed. Respondents were considered teen parents if the child was born prior to the respondent's 20th birthday. These items were collected during the initial phase of the study in 1996 to 1998. A precocious transitions index was created by summing the five variables.

The outcome variable is the total number of months of heroin use during the follow-up period (1996-1998 to 2009-2012). Heroin use includes injecting use, intranasal use, and other forms of use. This variable was assessed using the NHI reporting technique. The study adapted the NHI methodology developed by the UCLA Center for Advancing Longitudinal Drug Abuse Research. The NHI techniques have been successfully used to generate reliable retrospective measurements in long term drug abuse follow-up studies (Hser et al, 2007; Hser, Longshore, & Anglin, 2007). The assessment consisted of a form designed to collect data on the time dependent dynamics of events and behavior of each respondent. The form employed a timeline (in months) that plots specific events and behaviors that occurred during 12 month intervals from the time of the initial interview to the current interview. The NHI uses "memory anchoring" events to create cognitive associations with periods of drug use.

2.4 Data analysis

A descriptive analysis was conducted to determine the frequency or mean of all study variables. Then, a bivariate analysis (t test) examined the differences in mean months of heroin use among groups experiencing precocious transitions and those who did not experience the precocious transition. The multivariate analysis used zero inflated Poisson

(ZIP) to simultaneously estimate two models: 1) a logit model to determine which predictors affect the probability of being a heroin user; and 2) a Poisson model to determine which predictors affect how many months heroin is used. It is possible that precocious transitions may affect these processes in a similar or different way, or they could even have opposite effects on the two processes. Given the demographically homogenous nature of the sample, age is the only control variable included in the multivariate analysis. Model fit including overdispersion is assessed by plotting the observed values and predicted values from the ZIP model.

3. Results

Table 1 presents the descriptive statistics and Table 2 presents the results of the t tests. Fifty percent of the sample used heroin during the 15-year follow-up period. Among those who used heroin, it was used for an average of 46 months (3.8 years). On average, the sample experienced two precocious transitions. Sixteen percent experienced early cohabitating and there was no statistically significant difference in the average month of heroin use among those who did (28.1 months) and did not (21.8 months) cohabit early. Of the 49 percent who were early-nest leavers, mean months of heroin use was 17 and those who did not leave their guardians' home early had an average of 28 months of usage. Teenage parenthood, reported by 28 percent of participants, was associated with 14 mean months of heroin use compared to 26 months. There was a trend toward early nest leaving and teenage parenthood being protective factors ($p < 0.10$). About two-thirds of the sample dropped out of high school. Dropouts averaged 28 months of heroin use over the follow-up period compared to 13 months among those who did not drop out. Dropping out of high school is a significant risk factor for heroin use ($p < 0.05$). Finally, unemployment was experienced by 42 percent of participants, who averaged 31 months of heroin use at follow-up compared to 17 months among those who did not experience unemployment. This also indicated a significant risk factor for heroin use ($p < 0.05$). It is also important to note that some of the precocious transitions are correlated. Cohabitation has a weak positive correlation with teen parenthood ($r = 0.28$, $p = 0.002$) and high school dropout ($r = 0.21$, $p = 0.024$), and teen parenthood and high school dropout are also positively correlated ($r = 0.28$, $p = 0.002$). This may indicate a more complex pathway, or relationship among these variables, for the men in this study; however, because there is no indication of time-order, a formal mediation analysis is not possible.

The results of the multivariate analysis are presented in Table 3. The ZIP model demonstrates that precocious transitions are not significantly associated with initiation into heroin use, but are significantly associated with the number of months heroin was used by users over the follow-up period. Cohabitation ($B = 0.38$, $p < 0.001$) and dropping out of school ($B = 0.67$, $p < 0.001$) are risk factors for continued heroin use. Both precocious transitions are associated with a greater expected number of months of heroin use among users. On the other hand, early nest leaving ($B = -0.19$, $p < 0.001$) and teen parenthood ($B = -0.73$, $p < 0.001$) are associated with a smaller expected number of months of heroin use among users. Age is also associated with a smaller expected number of months of heroin use ($B = -0.04$, $p < 0.001$), indicating an "aging out" effect. Only unemployment is not statistically significant, which may be due to the reliance on income from illegal activities

among this population. The graph of observed and predicted values indicates good model fit (not shown).

A supplementary analysis compares subjects who were not enrolled in the follow-up study to subjects who were successfully enrolled. There are no significant group differences by age, cohabitation, dropout, or unemployment. However, subjects included in the follow-up study were more likely to be teen parents (28.6% vs. 7.3%, $p = 0.005$) and less likely to be early nest leavers (49.6% vs. 75.6%, $p = 0.004$). Given that teen parenthood is a protective factor and early nest leaving is a risk factor for continued heroin use, this may indicate that the follow-up sample is a select group that had more positive long-term outcomes than the group that was lost to follow-up.

4. Discussion

Overall, this study has demonstrated the influence that adolescent precocious transitions have on heroin use trajectories in adulthood for Mexican-American men living in disadvantaged urban neighborhoods. While much recent attention has been given to the emerging patterns of heroin use among suburban white young adults, attention has shifted away from long-term patterns of heroin use and dependence among poor minorities in these contexts. The findings from this study show a high prevalence of heroin use among Mexican-American men who were affiliated with gangs as adolescents with half of the sample continuing use over the 15-year follow-up period. These results present three key findings that warrant further discussion.

First, contrary to previous studies and theorized relationships, this study finds that early-nest leaving is a protective factor for continued heroin use. Thus, it may be that some youth are moving out and leaving families and homes that are entrenched in an intergenerational subculture of drug use. These findings are consistent with descriptions of “cholo families” identified by Moore (Moore, 1994) as Mexican-American families with multiple generations of criminality, incarceration, drug use and street-oriented connections. Instead of being supporters of conventional societal norms, intergenerational members among these types of families may actually facilitate their continued drug use patterns. This “intergenerational closure,” that has been described by scholars as having prosocial effects on African American youth in Chicago, seems to have a reverse effect on Mexican-Americans gang members in San Antonio (Moore & Chase-Lansdale, 2001; Sampson, & Laub, 1993). In fact, previous analyses with this study population have found that individuals with a stronger attachment to parents are more than twice as likely to have a longer embeddedness in the gang (Author cite).

Second, lower rates of heroin use were observed for those respondents who during adolescence experienced early parenthood but not those cohabiting during this same period. Surmised is that early parenthood for these highly delinquent adolescents engendered attachments, obligations and additional responsibilities that deterred them from more long-term heroin use. That is, having a child may have changed routine delinquent activities and reduced time spent with negative social peers - behaviors that jeopardized their parental responsibilities. This is similar to what Parra-Cardona and colleagues (Parra-Cardona,

Sharp, & Wampler, 2008; 2006) observed with Hispanic teenage fathers in the juvenile justice system who reported fatherhood as an important positive motivator in the lives of these men. As expected from previous studies among criminal adults (Haynie, Giordano, Manning, & Longmore, 2005; Horney, Osgood, & Haen Marshall, 1995), cohabitation during adolescence among these gang members increased heroin use and may have encouraged other maladaptive behaviors.

Third, the findings expand our understanding of the complex role adolescent precocious transitions play in the drug trajectories of high-risk young men. In this context, results indicate that men who experienced multiple precocious transitions as adolescents were not any more at risk for continued heroin use over those who experienced just one transition. This indicates the saliency and importance of identifying specific adolescent precocious transitions that are associated with more detrimental drug use patterns during these young men's life course trajectories. Also, our findings indicate that while these transitions do not have a significant effect on initiation of heroin use, they do have an important influence on individual's drug trajectories once they have initiated. Within the context of San Antonio's widely documented robust heroin market (Valdez & Cepeda, 2008; Valdez & Sifaneck, 2004), disentangling the influence adolescent transitions have on drug use patterns are key to reducing detrimental social and health consequences for an already at risk population. Additional research is needed among this population in order to disentangle the complex relationship among precocious transitions and drug use trajectories.

A major strength of this study is the nature of the longitudinal design that allowed for the follow-up of a cohort of street-recruited adolescent gang members approximately 15 years later. The present sample is unique in that it goes beyond the widely studied school and institutional-based gang samples that may experience very distinct and normative age-graded life transitions. Nevertheless, there are several limitations that need to be considered when interpreting the study's findings. First, the generalizability and interpretability of these data are somewhat limited until comparable investigations are done with similar populations. Second, the small sample size limits our ability to conduct more extensive multivariate analyses. However, given the relative homogeneity of the study sample, bias from this limitation is likely to be minimal. Third, the significant differences between the follow-up sample and the sample lost to follow up may bias the study findings and needs to be considered when interpreting our findings.

In closing, this study demonstrates the need for identifying critical points of drug intervention during key age-graded periods that will reduce the likelihood of heroin and other drug dependence among this and other similar populations that have gone underrepresented in existing research. Also, the culturally specific and distinctive experiences of these disadvantaged and marginalized populations should be considered in the planning and implementation of these interventions to reduce long-term heroin use trajectories. Lastly, the precocious transitions experienced by this population emerge within a socioeconomic environment that is an exposure risk distinct from the risks stemming from individual characteristics. That is, the scarcity of meaningful employment and social and educational opportunities within the community shape the the transitions of these adolescents that contribute to the persistence and/or desistance of long-term heroin use. The

public health challenge is to provide services that will contribute to normative life course transitions.

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Highlights

- Precocious transitions are linked to substance abuse and other risks
- 15-year follow-up study of gang-affiliated Mexican-American men was conducted
- Early-nest leaving and teenage parenthood are protective factors for heroin use
- Dropping out of high school and cohabiting are risk factors for heroin use

Table 1

Descriptive Statistics for Precocious Transitions and Heroin Use among Mexican-American Gang Members (n=119)

	n	%/Mean
Precocious Transition Index	119	2.0
Early Cohabiting	19	15.9%
Early Nest Leaving	58	48.7%
Teen Parent	33	27.7%
High School Dropout	80	67.2%
Unemployed	50	42.0%
Lifetime Heroin Use	59	49.5%
Mean Months Heroin Use	59	45.9

Table 2

Mean Months of Heroin Use Among those who Experienced Precocious Transitions Compared to Those Who Did Not (n=119)

	Yes		No		p
	Mean	SE	Mean	SE	
Early Cohabiting	28.1	10.0	21.8	3.4	
Early Nest Leaving	17.3	4.3	28.0	4.8	+
Teen Parent	14.2	4.4	26.1	4.1	+
High School Dropout	27.5	4.4	13.1	3.9	*
Unemployed	31.1	5.7	16.8	3.6	*

⁺
p<0.10

^{*}
p<0.05

Table 3

Results of Zero Inflated Poisson Model Regressing Months of Heroin Use on Precocious Transitions

	Poisson		Logit	
	b	p	b	p
Age	-0.04	***	0.06	
Early Cohabiting	0.38	***	0.22	
Early Nest Leaving	-0.19	***	0.59	
Teen Parent	-0.73	***	-0.03	
High School Dropout	0.67	***	-0.08	
Unemployed	-0.04		-0.72	
Log Likelihood	-1151			

p<0.001