Personal and Anticipated Strain Among Youth: A Longitudinal Analysis of Delinquency

Jeremiah Jaggers
East Tennessee State University, Johnson City, Tennessee
Sara Tomek, Kathleen A. Bolland, Wesley T. Church II, Lisa M. Hooper, and John M. Bolland
University of Alabama, Tuscaloosa, Alabama

Jeremiah Jaggers, Department of Social Work, East Tennessee State University; Sara Tomek, Department of Education, University of Alabama, Tuscaloosa; Kathleen A. Bolland, School of Social Work, University of Alabama, Tuscaloosa; Wesley T. Church II, School of Social Work, University of Alabama, Tuscaloosa; Lisa M. Hooper, Department of Education, University of Alabama, Tuscaloosa; John M. Bolland, Institute for Social Science Research, University of Alabama, Tuscaloosa.

Correspondence concerning this article should be addressed to Jeremiah Jaggers, Department of Social Work, East Tennessee State University, P.O. Box 70645, Johnson City, TN 37614. E-mail: jaggers@etsu.edu

Keywords: delinquency, juvenile delinquency, general differences

Abstract

General strain theory hypothesizes that the means to achieve culturally defined norms and expectations has been blocked, resulting in diverse types of strain (Agnew, 1992). Using longitudinal data from the Mobile Youth Survey, this study examines the simultaneous occurrence of personal strain and anticipated strain in minority adolescents from the impoverished communities of Mobile, Alabama. Results of the linear growth curve models demonstrate that anticipated strain and personal strain are associated with delinquency, though to a greater degree in males than in females. Furthermore, the effect of anticipated strain on delinquency is stronger than the effect of personal strain.

Introduction

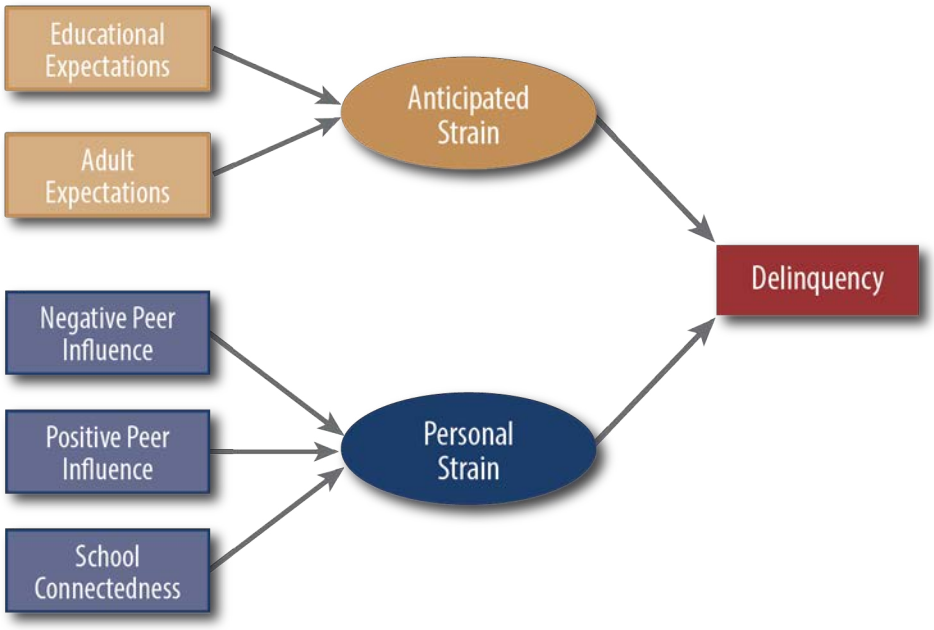
The causes and correlates of juvenile delinquency continue to be an important research topic as analytic techniques have become more sophisticated and relevant data bases have been more extensively mined. Among the most commonly cited predictors of delinquent behavior are involvement with delinquent peers (Keijsers et al., 2012; Knecht, Snijders, Baerveldt, Steglich, & Raub, 2010), family instability (Church, Tomek, et al., 2012; Church, Wharton, & Taylor, 2009; Farrington, Jolliffe, Loeber, Stouthamer-Loeber, & Kalb, 2001; Loeber & Farrington, 2000), poverty (Church, Jaggers, & Taylor, 2012; Jarjoura, Triplett, & Brinker, 2002), and strain (Agnew, 2001).

General strain theory posits that the inability to achieve culturally defined norms and expectations, often because access to the means to achieve such goals has been blocked, results in strain (Agnew, 2001; 1999; 1992). Agnew (1992) described several types of strain, including personal or experienced strain and anticipated strain (1992). Personal strain refers to personal experiences with any of the three major types of strain: loss of positive stimuli, presentation of negative stimuli, and goal blockage (Agnew, 2002).

Anticipated strain refers to the individual's expectation that current strains will continue or that new strains will occur (Agnew, 1992). To alleviate strain, Agnew believed that individuals engage in delinquent acts to achieve goals that they cannot attain, or believe they cannot attain, through conventional means.

Although there is theoretical and empirical support for the relationship between strain and delinquency, and among other factors that affect delinquency—such as delinquent peers, family instability, and poverty—much of the support for the effects of strain on delinquency comes from research that focuses exclusively on personal strain. Personal strain and anticipated strain that are likely to result in deviant behavior have been recognized as distinct and different forces that may result in differential outcomes (Agnew, 1992; Baron, 2009; Froggio, 2007). Both personal strain and anticipated strain can lead to delinquency (Agnew, 2002; Baron, 2009; Froggio, 2007). In the current study, we used longitudinal data from the Mobile Youth Survey (K. Bolland et al., 2013) to explore the effects of personal strain and anticipated strain on delinquent behavior in a sample of adolescent males and females living in extreme poverty. We included several factors that have been suggested to influence strain: expectations, peer influence, and school connectedness. Specifically, this study fills a gap in the literature by examining personal and anticipated strain concurrently, based on the model shown in Figure 1.

Figure 1. Theoretical model of delinquency.



General Strain Theory

In his seminal work, Merton (1968) defined strain as the difference between culturally and socially defined expectations on the one hand, and the means to achieve those expectations on the other. He explained that deviant behavior is primarily the result of financial strains experienced by individuals who do not have the means to achieve culturally and socially defined expectations. Working from Merton's premise, Agnew (1985) developed a revision of strain theory, which led to the development of his own general strain theory (Agnew, 1992), focusing more on norms and environmental context and less on culture and class. Agnew posited that strain results from (a) an individual's actual or anticipated failure to achieve a positively valued goal, (b) the removal of a positive stimulus from an individual, or (c) the presentation of a negative stimulus to an individual.

Strain theorists believe that an individual's inability to escape from negative situations or stimuli or to achieve socially defined expectations using conventional methods can result in deviant behavior (Agnew, 2002; Higgins, Piquero, & Piquero, 2011; Piquero & Sealock, 2010). Since strain is a common occurrence without noticeable undue consequences, Agnew (2001) advanced four characteristics of strain that are likely to result in criminal behavior. They are (a) strain that is seen as unjust, (b) strain that is high in magnitude, (c) strain that is associated with little social control, and (d) strain that creates an incentive to engage

in crime as a coping mechanism. As a coping mechanism, crime may be a way to express anger about perceived injustice, for example, or may be seen as a pathway to escaping negative situations. The coping hypothesis has been examined in juveniles specifically. For example, delinquency has been found to be a coping response to strain in juvenile populations (Rebellon, Manasse, Van Gundy, & Cohn, 2012). Further evidence has been put forward to indicate that conditions such as exposure to delinquent peers and delinquent beliefs (Agnew, 2010; Mazerolle & Maahs, 2000) and low socioeconomic status (Botchkovar, Tittle, & Antonaccio, 2012) contribute to strain and the development of delinquent behavior among juveniles.

Personal Strain

General strain theory posits that strain increases the likelihood that negative emotions will create feelings of pressure. Such pressure needs corrective action to reduce the effects of personal strain on behavior (Agnew, 1992). Some juveniles use delinquent behavior to cope with the effects of personal strain. Assaults, parental rejection, poor school performance, and work problems all contribute to personal strain that may result in crime (Agnew, 2001). Goal blockage and the failure to achieve financial independence may also contribute to strain and, later, to delinquency (Brezina, 2012). Failure to succeed financially and to achieve one's goals is frequent in communities with high crime rates, which also contributes to strain (Kaufman, Rebellon, Thaxton, & Agnew, 2008). Factors such as low socioeconomic status may also be linked to delinquent behaviors and outcomes. For example, a focus on the accumulation of wealth may contribute to delinquent activity, especially when it is not possible to achieve this goal using conventional means (Baron & Hartnagel, 2002; McCarthy & Hagan, 2001).

Peer influence, personal strain, and delinquency. The influence of peers on delinquent behavior has been widely reported in the literature. Increased time spent with delinquent peers increases the likelihood that an adolescent will also engage in delinquent activity (Keijsers et al., 2012). Delinquent youth often seek out friendships with other delinquent youth (Knecht, et al., 2010), potentially exacerbating the effect of peer influence on delinquent behavior. Controlling for family factors in cross-sectional (Church, et al., 2009) and longitudinal studies (Church et al., 2012), Church and colleagues have found that delinquent peer involvement increases delinquent behavior.

General strain theory can help to explain the influence of peers on delinquency. In their study of peer rejection, strain, and delinquency, Higgins and colleagues (2011) highlighted the importance of involvement with peers as an important component of adolescence. They found that peer rejection, especially among males, is a source of personal strain that can lead to delinquent behavior. Earlier studies led to similar conclusions; for example that those who wish to belong to a peer group but have been rejected experience personal strain that can lead to delinquent behavior (Chapple, 2005; Ladd, Herald-Brown, & Reiser, 2008). Adolescents from poor neighborhoods who experience negative peer pressure are also likely to experience strain, resulting in feelings of hopelessness (Drummond, Bolland, & Harris, 2011).

Race, Gender, and Strain

There is a common belief that findings of racial differences in juvenile offending are spurious (Leiber & Fox, 2005; Leiber & Johnson, 2008). Some have suggested that although there may be race-related differences in delinquent behavior, these differences may be cancelled out by other differences between races (Wright & Younts, 2009). For example, although some Black American children are at greater risk for delinquency because of the characteristics of their poor neighborhoods, other factors of those same neighborhoods, such as increased religiosity, may decrease their likelihood of engaging in crime.

Studies framed using general strain theory and controlling for ethnicity/race have found that

youth from racial minority groups tend to commit more delinquent acts than youth from racial majority groups (Hoskin, 2011; Peck, 2013; Peck, 2011). Research has suggested that Black American adolescents are more likely to experience personal strain, and are more likely to engage in delinquent behavior that can lead to criminal coping, than White American youth (Piquero & Sealock, 2010). This may be because discrimination provides an additional barrier to economic success and contributes to the strain experienced by racial minority adolescents (Perez, Jennings, & Gover, 2008; Simons, Chen, Stewart, & Brody, 2003). In addition, contextual factors may play a role in the relation between strain and delinquency. For example, some Black Americans experience strains associated with coming from disadvantaged neighborhoods (Kaufman et al., 2008) or the concentrated cumulative disadvantages that come from racial isolation, personal discrimination, and poor neighborhood social conditions (Martin et al., 2011; Riina, Martin, Gardner, & Brooks-Gunn, 2013).

General strain theory has demonstrated different effects of strain on males and females with respect to delinquent and criminal behavior (Broidy & Agnew, 1997; Mazerolle, 1998). Some have suggested that the gender gap—with males engaging in more delinquent and criminal behavior than females—may be due to familial factors that add to personal strain. Specifically, parents may give harsher punishments to male than to female children (Gershoff, 2002). Furthermore, although levels of anger are similar among males and females, females tend to exhibit higher levels of guilt, which discourages delinquency (Hay, 2003). Others have suggested that females' response to strain tends to be internal rather than external (Piquero, Fox, Piquero, Capowich, & Mazerolle, 2010).

Anticipated Strain

Agnew (2002) states that anticipated strain, like personal strain, results in negative emotions and corrective action to cope with the anticipation of goal blockage or the removal of positive stimuli. Early research on anticipated strain focused on educational achievement (Cloward & Ohlin, 1960; Cohen, 1955). Negative secondary school experiences such as anticipation of poor grades, or expecting to be bullied, can lead to anticipated strain (Agnew, 2010; Hay, Meldrum, & Mann, 2010). Anticipated strain resulting from negative school experiences may be due to the role that schools play in socializing adolescents. Compulsory education also teaches cultural norms and values (Lucia, Killias, & Junger-Tas, 2012). However, almost one-half of students from racial minorities will not graduate from high school on time, and many of these adolescents will never finish, instead engaging in criminal activity (Sweeten, Bushway, & Paternoster, 2009).

The failure to achieve goals resulting from conventional socialization typically has a low association with delinquent behavior (Agnew, 2001). This may be due to the prevailing cultural view in the United States that "success or failure is wholly the result of personal qualities; that he who fails has only himself to blame" (Merton, 1968, p. 222). Still, evidence suggests that negative secondary school experiences may cause high levels of strain and delinquency (Sampson & Laub, 1993), especially when youth associate with delinquent peers (Moon & Morash, 2012). This is evident in studies of victimization that have shown adolescent bullying leads to anticipated strain (Hay & Meldrum, 2010) and may contribute to violent delinquency (Baron, 2009; Zavala & Spohn, 2013). We contend that the failure to achieve one's educational expectations is a form of anticipated strain since the consequences of educational failure are not immediately evident. Rather, failure to achieve educational expectations has greater consequences in adulthood when goal blockage due to educational failures will become more apparent.

Although personal and anticipated strains are clearly distinct concepts, prior studies have shown that they are related (Agnew, 2002; Kort-Butler, 2010). In the same fashion as previous studies, we treat each of these theoretical

concepts as unique constructs. To fill a gap in the literature and address some limitations of previous studies (e.g., cross-sectional designs and lack of attention to anticipated strain), the current study focuses on a single research question: to what extent are delinquency trajectories associated with personal strain (negative peer influence, positive peer influence, and school connectedness), and anticipated strain (educational expectations and adult expectations)? Because gender differences have been demonstrated in several studies of adolescent delinquency, gender is included as a covariate.

Method

Sample

The sample of adolescents for the current study participated in the Mobile Youth Survey (MYS; K. Bolland et al., 2013), a 14-year multiple cohort study of adolescents living in low-income areas of Mobile, Alabama. The MYS data were collected annually between the years 1998 and 2011. However, one of the measures used in the current study, school connectedness, was not added to the survey until 2006. Because data for the year 2011 were not yet available for analysis when the current study was conducted, the sample consists of adolescents participating in the MYS from 2006 through 2010.

The original MYS data set was collected from children and adolescents between the ages of 9 and 19. However, by limiting our sample to only 5 years of data, full panels of observations existed across all ages for few participants. Looking at the frequency of observations across all ages, as well as taking into account the ages that produce the greatest number of those with full panels of observations, we determined that the age range of 13 to 16 would be utilized for the current analysis. To aid in the estimation of the longitudinal model, we further limited the sample to adolescents with only two or more data points (i.e. ages) available for analysis. A total of 1,360 adolescents were included in the analysis.

With respect to gender, the sample was fairly evenly split, with 47% (n = 643) males and 53% (n = 717) females. The sample comprises primarily Black Americans (96%, n = 1,312), with a small percentage of Latino/a Americans (4%, n = 48). All adolescents were from low-income households. In 2000, the median household income of the targeted neighborhoods was below $19,000 per year, with some neighborhood medians below $10,000 per year.

MYS Procedures

The MYS utilized a multiple-cohort design, in which new cohorts were added each calendar year. A brief description of the methodology follows (see K. Bolland et al., 2013 for full details regarding the sampling procedure, instrumentation, and missing data). Rather than selecting individuals for the sample, we selected low-income neighborhoods. This sampling method yielded a sample that may not be representative of all of Mobile, but is representative of the low-income neighborhoods in the area. The use of school system records allowed for the verification of this representative sample. Demographic characteristics of adolescents residing in selected neighborhoods participating in the MYS sample did not differ from adolescents residing in neighborhoods that did not participate in the MYS sample (A. Bolland, 2012).

We attempted to contact as many children and adolescents as possible between the ages of 10 and 18 (those within 3 months of their 10th and 18th birthdays were allowed to participate in the study), and their caregivers, from within the selected neighborhoods by passing out flyers and other handouts to residents and local businesses and by making door-to-door contact. When we obtained parental consent and adolescent assent, we scheduled group administrations of the survey. Questions were read aloud to groups of between 20 and 30 adolescents, who marked their answers in the experimenter-provided answer booklet. Only a small number of adolescents had difficulty with the group

administration. These adolescents were given one-on-one presentations of the survey questions. Adolescents were given $15 for each year that they participated in the survey (K. Bolland et al., 2013). The survey took approximately 1 hour to administer.

Measures

Delinquency

We measured adolescent delinquency using 18 MYS items. Six delinquent behaviors were addressed: carrying a gun, carrying a knife, pulling a gun or knife on someone, cutting or stabbing someone, being arrested, and gang membership. Carrying a gun and carrying a knife were both assessed using four questions. The first question asked if they had ever engaged in the behavior (e.g. "Have you ever carried a gun?"), with a dichotomous "No" and "Yes" response option. Three follow-up questions asked about carrying the gun/knife in the previous 90 days, 30 days, and 7 days (e.g. "In the past 3 months [90 days], did you carry a gun?"). The three follow-up questions had three possible responses of "No," "Yes, just once," and "Yes, more than once." Pulling a knife or gun on someone was assessed using three questions. The first question addressed ever pulling a knife or gun, with a dichotomous "No" and "Yes" response option. Two follow-up questions addressed the behavior over the past 90 and 30 days, with three possible responses of "No," "Yes, just once," and "Yes, more than once."

The frequency of cutting or stabbing another person was assessed using two questions: a dichotomous question about ever cutting or stabbing another person and a question about the previous year, with the trichotomous response options of "No," "Yes, just once," and "Yes, more than once."

The frequency of being arrested was assessed using two items, both with dichotomous "No" and "Yes" items. The first asked if they had ever been arrested, and the second asked if they had been arrested in the past year.

The amount of gang activity was assessed using three dichotomous "No" and "Yes" items. The first asked if they had ever been involved in a gang; the second asked if they were currently involved in a gang; and the third asked if they "hung out" with gang members.

A single summative scale was derived from these 18 items. A principal component analysis determined that a single summative scale accounted for 47% of the variance, with an eigenvalue of 2.79. The final summative scale ranged from 0–28 points and was created by summing the 8 dichotomous (0–1 points) and the 10 trichotomous (0–2 points) items. Higher values indicate more frequent and recent engagement in the delinquent criminal behaviors. Reliability was adequate, with a Cronbach's alpha of $\alpha = .76$ in this sample.

Personal Strain

Positive peer influence. Peer influence that affects adolescents in a positive way was measured by six items on the MYS. These six items measured the number of friends that reinforced the following positive behaviors: doing well in school, not having sex, not drinking alcohol, not doing drugs, not carrying a weapon, and not fighting. A sample item is: "How many of your friends think it's cool if you don't use drugs?" Each of the items had three response options: "Almost none of them," "Some of them," and "Most of them." A principal component analysis found that a single summative factor accounted for 70% of the variance in the items, with a resulting eigenvalue of 4.19. The final scale ranged from 0–12, with higher values indicating a greater positive peer influence. The internal consistency for these items was $\alpha = .91$.

Negative peer influence. Six MYS items were used to measure the amount of peer influence that affects behavior in a negative way. Items were created to measure the number of friends that negatively view the following behaviors: doing well in school, not having sex, not drinking alcohol, not doing drugs, not carrying a weapon, and not fighting. A sample item is: "How many

of your friends think you are a punk if you don't use drugs?" Three responses were presented: "Almost none of them," "Some of them," and "Most of them." A single summative scale was intended and, using a principal component analysis, it was found that a single scale accounted for 54% of the variance in the six items. The final scale ranged from 0–12, with higher values indicating a higher negative peer influence on their behaviors. The internal consistency of the scale for the sample was found to be α = .80.

School connectedness. The eight items created to measure school connectedness were adapted from Goodenow's (1993) Psychological Sense of School Membership scale. While Goodenow's scale consists of five items, each with 5-point Likert-type responses, the MYS included eight adapted questions, each with dichotomous responses. The rationale for altering the scale was the demand placed on the adolescents in completing the lengthy MYS survey. With over 400 items, responses were limited to two or three responses for all questions. The scale was created to determine the extent to which students felt they belonged to their school and the degree to which the teachers at the school interacted positively with the students. Sample items are: "There's at least one teacher in my school I can talk to if I have a problem" and "I feel as if I don't belong at my school." Three items were reverse scored due to their negative wording. Before creating our summative scale, we conducted a principal component analysis; 30% of the variance in the items was accounted for by a single summative scale, with an eigenvalue of 2.34. The negatively worded items did have lower factor scores than the positively worded items, contributing to the low proportion of variance. However, these negatively worded items did not differ substantively from the positively worded items. For that reason, a single summative scale was created, resulting in a range between 0 and 8, with higher scores indicating more school connectedness. The internal consistency of the scale was α = .62.

Anticipated Strain

Educational expectations. Educational expectations were measured by four items on the MYS. These items measured educational expectations for both high school and college. The two items relating to high school were: "Do you want to finish high school?" and "Do you think you will finish high school?" The two college items were: "Do you want to go to college?" and "Do you think you will go to college?" All four items were measured using a 3-point scale, "No," "Maybe," and "Yes." A principal component analysis was conducted to determine whether a single summative scale could be used for these four items. A single scale accounted for 51% of the variance in the items, with an eigenvalue of 2.04. This single scale was created by summing the four items, with the final scale ranging from 0–8 points, with high values indicating higher educational expectations. Cronbach's alpha was found to be α = .67 for the scale in the sample.

Adult expectations. The adolescents' expectations regarding their futures as adults were measured by four items on the MYS. The items were: "When I am an adult, I expect to have a good job that I like and that will pay enough for me to live on," "When I am an adult, I expect to have good friends I can talk to and do things with," "When I am an adult, I expect to have a long and happy marriage," and "When I am an adult, I expect to spend time in jail or prison." Each of the items had a dichotomous response, "Agree" or "Disagree." After reverse coding the last question, a principal component analysis was conducted to determine whether a single summative scale could be utilized. A single factor accounted for 43% of the variance in the items, with an eigenvalue of 1.74. By summing the items, the final scale ranged from 0–4, with higher values indicating more positive expectations for the future. The internal consistency of the scale was found to be α = .53.

Age and Gender

Age was measured through the adolescents' self-report of their age in years on the day of the

survey administration. Ages ranged from 13 to 16 years old, with the variable centered at 13 to aid in interpretation of parameter estimates. Gender was dichotomous, with males = 0.

Data Analysis

To determine the possibility of using gender as a covariate, mean differences of the independent variables for the two genders were compared using a MANOVA, with follow-up ANOVAs for the individual variables. To answer our main research question, two linear growth models were estimated. The dependent variable in both models was delinquency. The first model was the unconditional growth model. This model measures the change across time of delinquency of the adolescent without conditioning on any other independent variables. The unconditional growth model used the following equations, using Singer and Willett's (2003) notation:

$$Level\ 1:\ Y_{ij} = \pi_{0i} * age + \varepsilon_{ij}$$

$$Level\ 2:\ \pi_{0i} = \gamma_{00} + \zeta_{0i}$$

$$\pi_{1i} = \gamma_{10} + \zeta_{1i}$$

The second growth model built upon the unconditional growth model by adding both time-varying and time-invariant covariates to the Level 1 and Level 2 portions of the model, respectively. To the Level 1 model, we added the two anticipated strain variables of educational expectations and adult expectations, along with the three personal strain variables of negative peer influence, positive peer influence, and school connectedness. These variables were added as both intercepts (i.e., main effects) and slopes (i.e., interactions with age). Gender was added to all the Level 2 equations. Random effects were added to all Level 2 equations using an unstructured covariance matrix. All analyses were conducted using Full Information Maximum Likelihood (FIML) estimation, as implemented in SAS Proc Mixed (ver. 9.3; SAS Institute Inc., Cary, NC). When missing data were ignorable (i.e., missing some at random or missing completely at random), FIML provides unbiased and efficient parameter estimates (see Allison, 2012, for a discussion of the relative advantages of FIML versus multiple imputation). A. Bolland (2012) provides evidence that missing data in the MYS are ignorable.

Results

Preliminary Data Analysis

In the MANOVA, significant mean differences between males and females were detected in all of the independent variables, *Wilks' Lambda* = .91, F (5, 3031) = 60.16, $p < .001$. Means are displayed in Table 1. Overall, females had significantly higher educational expectations, F (1, 3035) = 55.71, $p < .001$, significantly higher adult expectations, F (1, 3035) = 59.42, $p < .001$, significantly higher positive peer influence, F (1, 3035) = 71.73, $p < .001$, and significantly higher school connectedness, F (1, 3035) = 62.13, $p < .001$ than males. Females reported significantly lower levels of negative peer influence, F (1, 3035) = 151.71, $p < .001$ than males. In general, females experienced less personal strain (i.e., lower negative peer influence, higher positive peer influence, and higher school connectedness) than males. Females also had less anticipated strain (i.e., higher educational expectations and higher adult expectations) than males.

Table 1. *Mean Anticipated Strain and Personal Strain by Gender*

	Educational Expectations M (SD)	Adult Expectations M (SD)	Negative Peer Influence M (SD)	Positive Peer Influence M (SD)	School Acceptance M (SD)
Males	7.19 (1.27)	3.36 (0.92)	2.40 (2.76)	4.82 (4.05)	6.18 (1.72)
Females	7.50 (1.01)	3.60 (0.78)	1.29 (2.21)	6.16 (4.59)	6.65 (1.58)
Overall	7.36 (1.14)	3.49 (0.86)	1.79 (2.53)	5.54 (4.40)	6.44 (1.66)

Unconditional Growth Model

The unconditional growth model was estimated to determine the change in delinquency over time, independent of any other variables. Parameter estimates are shown in Table 2. Delinquency was found to significantly increase between the ages of 13 and 16, $\gamma = 0.61$, t (1154) = 6.41, $p < .001$.

Personal Strain, Anticipated Strain, and Gender

The three personal strain variables of negative peer influence, positive peer influence, and school connectedness—along with the two anticipated strain variables of educational expectations and adult expectations—were all added to the model as time-varying covariates. In addition, gender was added to the model as a time-invariant covariate. The full model was estimated, with nonsignificant parameter estimates removed from the final model. Parameter estimates for the final model, with all significant parameters retained, are found in Table 2.

The amount of negative peer influence perceived by the adolescent was positively related to delinquency, $\gamma = 0.14$, t (105) = 3.08, $p = .003$. That is, higher amounts of peer influence resulted in higher levels of delinquency at age 13. This relationship was constant across all ages. Both the amount of positive peer influence, $\gamma = -0.06$, t (47) = -2.44, $p = .02$, and school connectedness, $\gamma = -0.19$, t (5) = -2.95, $p = .03$, were negatively related to delinquency at age 13. Higher levels of positive peer influence resulted in lower levels of delinquency at age 13. Both of these variables had constant relationships across all ages. Overall, the greater the personal strain (i.e., the higher the negative peer influence, the lower the positive peer influence, and the lower the feelings of school connectedness) experienced by the adolescent, the higher the levels of delinquency.

Delinquency measures at age 13 also differed between males and females, $\gamma = -1.53$, t (50) = -6.17, $p < .001$. Females had significantly lower levels of delinquency than males; however, we did find this relationship remained constant across all ages of the model.

The number of educational expectations were negatively related to the mean delinquency score at age 13, $\gamma = -0.81$, t (186) = -5.08, $p < .001$, as those with higher expectations had lower delinquency levels. Trajectories of delinquency between ages 13 and 16 differed based on the number of educational expectations the adolescents had for their future. Adolescents without any reported educational expectations for the future showed a slight, yet nonsignificant, decrease in delinquency over time, $\gamma = -0.81$, t (1150) = -1.38, $p = .17$. However, over time, those with high educational expectations had an increase in delinquency, $\gamma = 0.18$, t (50) = 2.28, $p = .03$. Although this group exhibited increases in delinquency, their delinquency levels were still lower overall.

Table 2. *Linear Growth Model of Delinquency of the Adolescent*

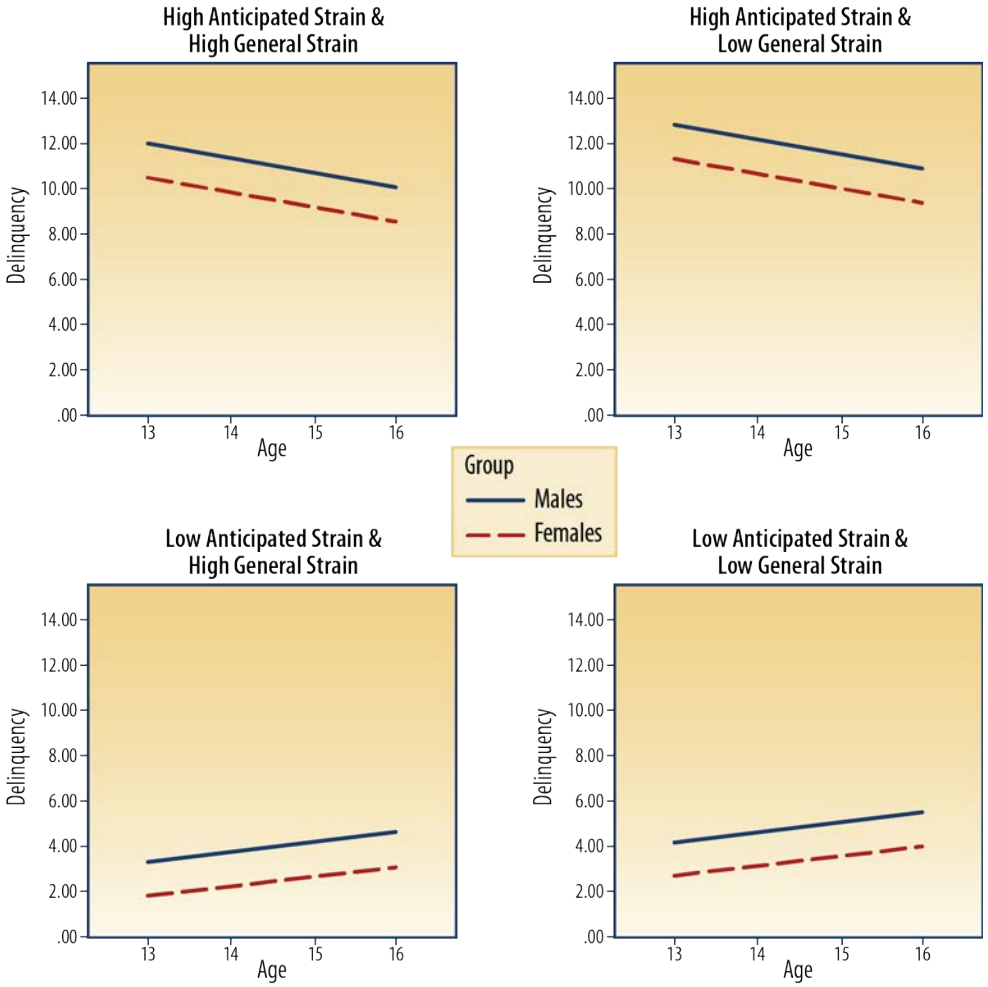
Parameter	Unconditional Growth Model		Full Model	
	Estimate	SE	Estimate	SE
Intercept	3.72**	0.19	14.09**	1.27
Educational Expectations			-0.82**	0.16
Adult Expectations			-0.61**	0.12
Negative Peer Influence			0.14*	0.04
Positive Peer Influence			-0.06*	0.06
School Connectedness			-0.19*	0.06
Gender			-1.53**	0.25
Age	0.61**	0.09	-0.81	0.58
Age*Educational Expectations			0.18*	0.08
BIC	18995.8		18896.5	

Note. *$p < .05$. **$p < .001$.

The number of adult expectations also were negatively related to delinquency, $\gamma = -0.61$, $t\ (127) = -5.03$, $p < .001$. The more adult expectations the adolescent had of himself or herself, the lower the levels of delinquency at age 13. This relationship was constant across all ages. With more anticipated strain (i.e., lower levels of both educational and adult expectations), adolescents exhibited higher levels of delinquency.

Trajectories of delinquency for the two genders based on levels of both anticipated and personal strain are plotted in Figure 2. High levels of anticipated strain corresponded to low educational expectations and low adult expectations, whereas low levels of anticipated strain corresponded to high educational expectations and high adult expectations. High levels of personal strain corresponded to low positive peer influence, high negative peer influence, and low school connectedness, while low levels of personal strain corresponded to high positive peer influence, low negative peer influence, and high school connectedness. Separate lines for the two genders are displayed in each of the graphs. Anticipated strain appears to have had a greater impact on delinquency of male and female adolescents than personal strain. Those with higher levels of anticipated strain, or lower future expectations, exhibited greater delinquency rates than those adolescents with low levels of anticipated strain. Personal strain did affect delinquency rates, but to a much smaller degree than anticipated strain.

Figure 2. Trajectories of delinquency over time based on personal and anticipated strain.



Discussion

The current study was conducted to fill a gap in the literature and address some limitations of previous studies by examining personal strain and anticipated strain and their effect on delinquency in a longitudinal sample of adolescents living in low-income households and communities. Two linear growth models were estimated, with delinquency being the dependent variable in both models. The first model was the unconditional growth model. This model measured the change in the adolescent's delinquency over time without conditioning on any other independent variables. The second growth model built upon the unconditional growth model by adding both time-varying and time-invariant covariates to the Level

1 and Level 2 portions of the model, respectively. To the Level 1 model, the two anticipated strain variables of educational expectations and adult expectations, along with the three personal strain variables of negative peer influence, positive peer influence, and school connectedness were added.

Preliminary analysis showed that delinquency increased over time independent of any variables and increased significantly between the ages of 13 and 16. However, when examining anticipated and personal strain, levels of delinquency varied greatly between females and males. The influence of personal strain was studied by examining peer influence (negative and positive) and school; the influence of anticipated strain was studied by examining educational expectations and adult expectations in a sample of adolescents residing in highly impoverished neighborhoods. Agnew (1992) stated that strain increases the likelihood that negative emotions will create pressure, and that such pressure needs corrective action to reduce the effect of the strain. In some cases that corrective action (as perceived by the individual experiencing the strain) results in using delinquent behavior as a coping mechanism.

The current study supports previous findings (Church et al., 2012) demonstrating that peer influence has an effect on delinquency. As would be expected, negative peer influence was found to have a positive influence on delinquency. However, the current study went further and examined the level of peer influence over time. The findings showed that regardless of age, higher levels of negative peer influence resulted in higher levels of delinquency. The age that a youth begins to engage in delinquent behavior is an important factor to consider, since research has reported that the earlier youth begin delinquent activity, the more likely they are to continue delinquent activity through adolescence and adulthood (Moffitt, 1993). The current study found that positive peer influence, as well as positive school connectedness, were negatively related to delinquency. Positive peer and school relationships served as protective factors against engaging in delinquent behavior. It is possible that these positive relationships reduced the levels of strain experienced by youth, or that by engaging in such relationships youth had an alternative way to deal with strain, which would otherwise lead to criminal coping. These findings have not clarified how positive peer and school relationships affect strain; therefore, how these relationships protect against strain and delinquency should be examined further.

Youth in the current study who expected to graduate from high school, go into a trade or enter two-year or four-year post-secondary school, had lower levels of delinquency, as well as higher expectations of themselves as adults, than those who did not have such educational expectations. Interestingly, this trend did not always hold over time. Youth with higher educational expectations were more engaged in delinquent activity over time than those with lower educational expectations. Youth with high expectations residing in these low-income neighborhoods may have had social constraints such as poverty and lack of social support, which they believed would inhibit their ability to achieve their educational expectations. Youth with high education expectations experienced anticipated strain as they began to believe they would not be able to attain their desired goals. As Agnew (2001) points out, such youth may see this as unjust, high in magnitude, or out of their control and then may engage in delinquency as a way of coping. This trend was not seen where adult expectations were concerned. We suspect that this may have been due to the developmental aspects of educational expectations versus adult expectations. Educational expectations deal with more immediate concerns to those aged 13 to 16, while adult expectations, such as marriage, are not of paramount concern.

Females experienced significantly less anticipated strain and personal strain than males. Females reported greater school connectedness,

higher positive peer influence, lower negative peer influence, and higher adult and educational expectations than their male counterparts. The differences in delinquent behavior by gender were certainly expected. However, females' lower levels of personal strain and anticipated strain may be explained by Broidy and Agnew's (1997) work on gender and strain; certain types of strain result in criminal coping and are highly dependent upon gender. We relied heavily on measures of peer and school affiliation and expectations for the future. While these seemed to result in delinquency used as a coping mechanism among males, there is little evidence in the current study to indicate that these types of anticipated and personal strain lead to delinquent behaviors among females.

This study examined personal strain and anticipated strain simultaneously. The results showed that both have an effect on delinquent behavior. The anticipation of educational success without the means to achieve it, along with negative peer influence and not being accepted at one's current school, can lead to meaningful strain. In turn, this strain can lead to delinquent activity, especially among males. Levels of delinquency were much higher when levels of anticipated strain were higher. High levels of anticipated strain had a strong negative effect on delinquency at younger ages and became less influential as juveniles aged. Low levels of anticipated strain were also more likely to have an effect at younger ages. Still, the current study did not clarify the role of anticipated strain versus personal strain on the motivation to engage in delinquent behavior. Why males' behavior was affected to a greater degree than females' is also unclear. Future studies should examine these areas in greater depth.

Limitations and Strengths

Several limitations of the study must be considered. First, the MYS study contains data collected from a large population of at-risk youth. Because the sample was from several demographically homogeneous neighborhoods, the results may not be generalizable to other populations. Another limitation is the limited number of years from which data were collected. While the full MYS is a 14-year longitudinal study, our data contains data from 5 of those years only due to the addition of our key variables of interest during the MYS administration. Therefore, a full longitudinal analysis across all ages (9-19) was not possible. Another limitation is that observations were missing from the study data set as the panels were not complete for most of the adolescents. However, we limited our analysis to youth who participated in two or more data collection years (50% of the original data). Within our sample, 69% of participants had three or more data points. Finally, the internal consistency of educational expectations (.67), adult expectations (.53), and school connectedness (.62) were found to be lower than is typically accepted in practice. It is likely that the low internal consistency was a function of the use of dichotomous measures. The MYS was developed with the understanding that many participants may have had cognitive limitations that would have made differentiating among multiple response alternatives difficult, especially with a lengthy survey. This, coupled with the large number of questions, led to a decision to limit most responses to two categories (e.g., agree, disagree) rather than to the more typical five to seven response alternatives. The dichotomous nature of the response alternatives resulted in reduced variance in responses, with a likely reduction in the magnitude of associations among variables and lower levels of internal consistency within scales.

The current study also has several strengths worth noting. First, this investigation is one of the first studies to explore these relations using a longitudinal methodology with a large sample and several waves of data with a new focus on anticipated strain. This allowed for the examination of change over time, which improves our understanding of this population. It is important to note that the sample in this study was homogeneous with respect to socioeconomic status

and race/ethnicity: The vast majority of the participants were Black American adolescents living in extreme poverty. Therefore, the differences in influences on delinquency cannot be attributed to ethnicity or socioeconomic status or to interactions of those variables with other variables. Second, the population that the sample was derived from is predominantly Black American adolescents, living below the poverty line, and living in low-income neighborhoods. The homogeneity of the sample gives greater insight into the hardships and strengths of youth living under these conditions, which occur in many major cities, and which could lead to interventions developed specifically for this population.

About the Authors

Jeremiah Jaggers, PhD, is an assistant professor in the Department of Social Work, East Tennessee State University, Johnson City, Tennessee.

Sara Tomek, PhD, is an assistant professor in the Department of Education, University of Alabama, Tuscaloosa.

Kathleen A. Bolland, PhD, is assistant dean, School of Social Work, University of Alabama, Tuscaloosa.

Wesley T. Church II, MSW, PhD, is an associate professor and chair of the PhD program, School of Social Work, University of Alabama, Tuscaloosa.

Lisa M. Hooper, PhD, is associate professor in the Department of Education, University of Alabama, Tuscaloosa.

John M. Bolland, PhD, is professor emeritus, University of Alabama, Tuscaloosa.

References

Agnew, R. (1985). A revised strain theory of delinquency. *Social Forces, 64*(1), 151–167.

Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology, 30*(1), 47–88.

Agnew, R. (1999). A general strain theory of community differences in crime rates. *Journal of Research in Crime and Delinquency, 36*(2), 123–155.

Agnew, R. (2001). Building on the foundation of general strain theory: Specifying the types of strain most likely to lead to crime and delinquency. *Journal of Research in Crime & Delinquency, 38*(4), 319–361.

Agnew, R. (2002). Experienced, vicarious, and anticipated strain: An exploratory study on physical victimization and delinquency. *Justice Quarterly, 19*(4), 603–632.

Agnew, R. (2010). Controlling crime: Recommendations from general strain theory. In H.D. Barlow & S. H. Decker (Eds.), *Criminology and public policy: Putting theory to work.* Philadelphia, PA: Temple University Press.

Allison, P. D. (2012). Handling missing data by maximum likelihood. SAS Global Forum, Paper 312–2012.

Baron, S. W. (2009). Street youths' violent responses to violent personal, vicarious, and anticipated strain. *Journal of Criminal Justice, 37*(5), 442–451.

Baron, S. W., & Hartnagel, T. F. (2002). Street youth and labor market strain. *Journal of Criminal Justice, 30*(6), 519–533.

Bolland, A. C. (2012). *Representativeness two ways: An assessment of representativeness and missing data mechanisms in a study of an at-risk population* (Doctoral dissertation, The University of Alabama, Tuscaloosa).

Bolland, K. A., Bolland, J. M., Tomek, S., Deveraux, R., Mrug, S., & Wimberly, J. (2013). Trajectories of adolescent alcohol use by gender and early initiation status. *Youth & Society.* doi:10.1177/0044118X13475639

Botchkovar, E. V., Tittle, C. R., & Antonaccio, O. (2012). Strain, coping, and socioeconomic status: Coping histories and present choices. *Journal of Quantitative Criminology*. doi:10.1007/s10940-012-9177-7

Brezina, T. (2012). Anomie-strain theory. In C. D. Bryant (Ed.), *The Routledge handbook of deviant behavior.* New York, NY: Routledge.

Broidy, L., & Agnew, R. (1997). Gender and crime: A general strain theory perspective. *Journal of Research in Crime and Delinquency*, *34*(3), 275–306.

Chapple, C. L. (2005). Self-control, peer relations, and delinquency. *Justice Quarterly*, *22*, 89–106.

Church W. T., Jaggers, J., & Taylor, J. (2012). Neighborhood, poverty, and delinquency: An examination of differential association and social control theory. *Children and Youth Services Review, 34*(5), 1035–1041.

Church, W. T., Tomek, S., Bolland, K. A., Hooper, L. M., Jaggers, J., & Bolland, J. (2012). A longitudinal examination of predictors of delinquency: An analysis of data from the Mobile Youth Survey. *Children and Youth Services Review, 34*(12), 2400–2408.

Church, W. T., Wharton, T., & Taylor, J. K. (2009). An examination of differential association and social control theory: Family systems and delinquency. *Youth Violence and Juvenile Justice*, *7*(1), 3–15.

Cloward, R. A., & Ohlin, L. E. (1960). *Delinquency and opportunity*. New York, NY: Free Press.

Cohen, A. K. (1955). *Delinquent boys*. New York, NY: Free Press.

Drummond, H., Bolland, J. M., & Harris, W. A. (2011). Becoming violent: Evaluating the mediating effect of hopelessness on the code of the streets thesis. *Deviant Behavior, 32*(3), 191–223.

Farrington, D. P., Jolliffe, D., Loeber, R., Stouthamer-Loeber, M., & Kalb, L. M. (2001). The concentration of offenders in families, and family criminality in the prediction of boys' delinquency. *Journal of Adolescence*, *24*, 579–596.

Froggio, G. (2007). Strain and juvenile delinquency: A critical review of Agnew's general strain theory. *Journal of Loss and Trauma: International Perspectives on Stress & Coping, 12*(4), 383–418.

Gershoff, E. T. (2002). Corporal punishment by parents and associated child behaviors and experiences: A meta-analytic and theoretical review. *Psychological Bulletin, 128*(4), 539–579.

Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and education correlates. *Psychology in the Schools*, *30,* 79–90.

Hay, C. (2003). Family strain, gender, and delinquency. *Sociological Perspectives, 46*(1), 107–135.

Hay, C., & Meldrum, R. (2010). Bullying victimization and adolescent self-harm: Testing hypotheses from general strain theory. *Journal of Youth and Adolescence, 39*(5), 446–459.

Hay, C., Meldrum, R., & Mann, K. (2010). Traditional bullying, cyber bullying and deviance: A general strain theory approach. *Journal of Contemporary Criminal Justice, 26*(2), 130–147.

Higgins, G. E., Piquero, N. L., & Piquero, A. R. (2011). General strain theory, peer rejection, and delinquency/crime. *Youth & Society, 43*(4), 1272–1297.

Hoskin, A. (2011). Explaining the link between race and violence with general strain theory. *Journal of Ethnicity in Criminal Justice*, *9*(1), 56–73.

Jarjoura, G. R., Triplett, R. A., & Brinker, G. P. (2002). Growing up poor: Examining the link between persistent childhood poverty and delinquency. *Journal of Quantitative Criminology*, *18*(2), 159–187.

Kaufman, J. M., Rebellon, C. J., Thaxton, S., & Agnew, R. (2008). A general strain theory of racial differences in criminal offending. *Australian & New Zealand Journal of Criminology*, *41*, 421–437.

Keijsers, L., Branje, S., Hawk, S. T., Schwartz, S. J., Frijns, T., Koot, H. M., … & Meeus, W. (2012). Forbidden friends as forbidden fruit: Parental supervision of friendships, contact with deviant peers, and adolescent delinquency. *Child Development*, *83*, 651–666.

Knecht, A., Snijders, T. A. B., Baerveldt, C., Steglich, C. E. G., & Raub, W. (2010). Friendship and delinquency: Selection and influence in early adolescence. *Social Development*, *19*, 494–514.

Kort-Butler, L. A. (2010). Experienced and vicarious victimization: Do social support and self-esteem prevent delinquent responses? *Journal of Criminal Justice, 38*(4), 496–505.

Ladd, G. W., Herald-Brown, S., & Reiser, M. (2008). Does chronic classroom peer rejection predict the development of children's classroom participation during the grade school years? *Child Development*, *79*, 1001–1015.

Leiber, M. J., & Fox, K. C. (2005). Race and the impact of detention on juvenile justice decision making. *Crime & Delinquency, 51*(4), 470–497.

Leiber, M. J., & Johnson, J. D. (2008). Being young and black: What are their effects on juvenile justice decision making? *Crime & Delinquency, 54*(4), 560–581.

Loeber, R., & Farrington, D. P. (2000). Young children who commit crime: Epidemiology, developmental origins, risk factors, early interventions, and policy implications. *Development and Psychopathology*, *12*, 737–762.

Lucia, S., Killias, M., & Junger-Tas, J. (2012). The school and its impact on delinquency. In J. Junger-Tas, I. H. Marshall, D. Enzmann, M. Killias, M. Steketee, & B. Gruszczynska. *The many faces of youth crime.* New York, NY: Springer.

Martin, M. J., McCarthy, B., Conger, R. D., Gibbons, F. X., Simons, R. L., Cutrona, C. E., & Brody, G. H. (2011). The enduring significance of racism: Discrimination and delinquency among black American youth. *Journal of Research on Adolescence*, *21*(3), 662–676.

Mazerolle, P. (1998). Gender, general strain, and delinquency: An empirical examination. *Justice Quarterly, 15*(1), 65–91.

Mazerolle, P., & Maahs, J. (2000). General strain and delinquency: An alternative examination of conditioning influences. *Justice Quarterly, 17*(4), 753–778.

McCarthy, B., & Hagan, J. (2001). When crime pays: Capital, competence, and criminal success. *Social Forces, 79*(3), 1035–1060.

Merton, R. K. (1968). *Social theory and social structure* (rev. ed.). New York, NY: Free Press.

Moffitt, T. E., (1993). Adolescence-limited and life-course persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100*, 674–701.

Moon, B., & Morash, M. (2012). General strain theory as a basis for the design of school interventions. *Crime & Delinquency*, doi:10.1177/0011128712466949

Peck, J. (2011). *General strain theory, race, and delinquency.* (Master's thesis). Retrieved from: http://scholarcommons.usf.edu/etd/3287/

Peck, J. H. (2013). Examining race and ethnicity in the context of general strain theory, depression, and delinquency. *Deviant Behavior, 34*, 706–726.

Perez, D. M., Jennings, W. G., & Gover, A. R. (2008). Specifying general strain theory: An ethnically relevant approach. *Deviant Approach, 29*(6), 544–578.

Piquero, N. L., Fox, K., Piquero, A. R., Capowich, G., & Mazerolle, P. (2010). Gender, general strain theory, negative emotions and disordered eating. *Journal of Youth and Adolescence, 39*(4), 380–392.

Piquero, N. L., & Sealock, M. D. (2010). Race, crime, and general strain theory. *Youth Violence and Juvenile Justice, 8*(3), 170–186.

Rebellon, C. J., Manasse, M. E., Van Gundy, K. T., & Cohn, E. S. (2012). Perceived injustice and delinquency: A test of general strain theory. *Journal of Criminal Justice, 40*(3), 230–237.

Riina, E. M., Martin, A., Gardner, M., & Brooks-Gunn, J. (2013). Context matters: Links between neighborhood discrimination, neighborhood cohesion and African American adolescents' adjustment. *Journal of Youth and Adolescence*, *42*(1), 136–146.

Sampson, R. J., & Laub, J. H. (1993). *Crime in the making*. Cambridge, MA: Harvard University Press.

Simons, R. L., Chen, Y., Stewart, E. A., & Brody, G. H. (2003). Incidents of discrimination and risk for delinquency: A longitudinal test of strain theory with an African American sample. *Justice Quarterly, 20*(4), 827–854.

Singer, J. D. & Willett, J. B. (2003). *Applied longitudinal data analysis.* New York, NY: Oxford University Press.

Sweeten, G., Bushway, S. D., & Paternoster, R. (2009). Does dropping out of school mean dropping into delinquency? *Criminology, 47*(1), 47–91.

Wright, B. R. E., & Younts, C. W. (2009). Reconsidering the relationship between race and crime: Positive and negative predictors of crime among African American youth. *Journal of Research in Crime and Delinquency*, *46*(3), 327–352.

Zavala, E., & Spohn, R. E. (2013). The role of vicarious and anticipated strain on the overlap of violent perpetration and victimization: A test of general strain theory. *American Journal of Criminal Justice, 38*(1), 119–140.