

Life Stress, Anger and Anxiety, and Delinquency: An Empirical Test of General Strain Theory*

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General strain theory (Agnew 1992) departs from traditional strain theories by emphasizing the role of the individual's affective responses to negative life experiences in fostering deviant behavior. In this analysis, we examine the central hypotheses of general strain theory using data from a three-wave panel study of high school youths in the Boston metropolitan area (N = 939). Covariance structure models reveal that anger and hostility in response to negative life events do play a causal role in fostering more aggressive forms of delinquency, but are not significantly related to either nonaggressive delinquency or marijuana use. Furthermore, the conditional effects predicted by general strain theory, in which the impact of strain on delinquency varies by youths' personal and social resources, are inconsistent. Discussion centers on the prospect of increasing the utility of general strain theory by further imbuing it with concepts and perspectives from the sociology of mental illness.

After several years in which they were out of favor, the past decade has seen renewed interest in strain theories of deviance. This resurgence has been fueled in large part by Agnew's general strain theory (Agnew 1992), which departs from traditional strain theories (see Merton 1938; Menard 1995; Farnworth and Leiber 1989; Grogger 1998) by emphasizing the role of the individual's affective responses to negative life experiences in fostering deviant behavior. To date, however, the major hypothe-

ses of general strain theory have not been adequately tested. The present study examines the central hypotheses in Agnew's general strain theory of deviance, focusing in particular on three core issues. First, we examine the generality of general strain theory by drawing on multiple measures of life stresses and relationship difficulties as well as multiple measures of delinquency (nonviolent delinquency, aggressive/violent delinquency, and marijuana use). Second, we examine the least investigated but most crucial element of this theory, involving the role of anger and anxiety in mediating the relationship between strain and deviant behavior. Finally, we examine the ancillary hypothesis that the impact of strain on deviant behavior varies by levels of personal and social resources. To model these associations, we estimate a series of covariance structure models using three waves of panel data collected from a community sample of adolescents in the greater Boston area.

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THEORETICAL OVERVIEW

The influence of strain theories on sociologists' understanding of crime and deviance has fluctuated greatly during the past 60 years. Merton's (1938) seminal article, "Social Structure and Anomie," marked the beginning of a thirty year period in which strain theories dominated sociological research on deviance and criminality (see Agnew 1995b). Merton's anomie theory of deviance (see also Merton 1968) locates the source of deviant and criminal motivations in the disjunction between universally held success goals and socially structured opportunities to attain them. Though modified and elaborated, Merton's conceptualization of strain as emerging from tensions and conflicts between the cultural structure (the distribution and organization of norms, values, and interests) and the social structure (the distribution and organization of social positions (Merton 1995)) pervaded later strain theories of deviance. For example, strain resulting from the limited prospects for financial success among lower class youths became a principal element of Cohen's (1955) theory concerning the etiology of delinquent gangs and Cloward and Ohlin's (1960) theory integrating anomie and differential association theories of deviance (see also Merton 1995; Hoffman and Ireland 1995).

The predominance of strain theory waned in the 1970s, due largely to mounting evidence from studies of weak or nonexistent associations between goal-opportunity discrepancies and delinquency among adolescents (for reviews, see Agnew 1995b; Elliott, Huizinga, and Ageton 1985; Menard 1995). However, a number of theoretical and empirical developments since that time have fostered renewed interest in strain theories of deviance. First, recent studies based on superior measures of the discrepancy between aspirations and expectations concerning economic success goals and more complete specifications of Merton's theoretical model provide support for many of the hypotheses derived from strain theory (Menard 1995; Farnworth and Leiber 1989; cf., Jensen 1995; Agnew et al. 1996). Some sought to reinvigorate strain theory by integrating it with control theories of deviance, arguing that the association between strain and deviance is mediated by the attenuation of informal social controls, primarily involving attachment to parents and schools

(Elliott et al. 1985). Other researchers attributed these null findings to weaknesses in the traditional definition of strain. During adolescence, the period in which rates for most delinquent offenses tend to peak (see Elliott 1994; Farrington 1986; Steffensmeier, Streifel, and Harer 1987), the achievement of future success is not nearly as salient as more immediate goals, such as acceptance by and status with peers, an active social life, and good school performance (e.g., Elliott and Voss 1974; Greenberg 1981; Agnew 1995b). Thus, a comprehensive and appropriate measure of goal-expectation discrepancies needs to incorporate goals other than those pertaining to future monetary success.

One noteworthy attempt to rejuvenate strain theories of deviance is found in Agnew's general strain theory (Agnew 1995a; Agnew 1995b; Agnew 1992). Agnew elaborates Merton's anomie theory by reconceptualizing its central construct and by attempting to enrich it through integration with related theoretical perspectives. In contrast to Merton's view of strain as a structural condition, Agnew broadens this traditional definition to include the occurrence of strain at the individual level. Drawing on both equity/distributive justice and stress perspectives, he defines strain as any event or situation in which positive or valued stimuli are removed or threatened or negative stimuli are presented, focusing in particular on negative social relations with significant others. Second, drawing once again on stress perspectives as well as frustration-aggression theory, he proposes an affective link between strain and deviant behavior. Agnew argues that strains, particularly conflictual social relationships, engender negative affective states (e.g., anger, fear, frustration) that create internal pressure for corrective action. These corrective actions may become deviant or criminal if youths see them as providing an alternative means to get what they want, or as an opportunity to lash out at others whom they blame for their lot, or as a means of escape from their negative emotions. Agnew claims that deviant responses to strain may take a variety of forms—including minor delinquency, alcohol and drug use—and are not limited to aggressive and hostile acts. Thus, in addition to its more expansive definition of strain, general strain theory purports to be a general theory in that it applies to a range of deviant and unconventional behaviors. In recent years Agnew

and his colleagues have sought to apply general strain theory to a variety of longstanding issues in criminological research, most notably to explain age (Agnew 1997), gender (Broidy and Agnew 1997), and community (Agnew et al. 1996) differences in deviant and criminal behavior.

Like Merton, Agnew recognizes that, while it may create pressures toward deviance, strain does not inevitably lead to deviant behavior. In Merton's formulation, whether strain ultimately leads to the use of deviant means to secure valued ends depends on the individual's "mode of adaptation," or one's efforts to reconcile culturally valued success goals under conditions of structural constraint. Deviant and criminal behavior are likely to occur when individuals adapt to this discrepancy by continuing to pursue culturally valued goals while rejecting the institutionally prescribed norms governing their pursuit (Merton 1938). Drawing primarily on studies from the stress and coping literature showing variable effects of major life stresses across different indicators of mental health and well-being (e.g., Wheaton 1990; Aseltine and Kessler 1993), Agnew argues that the impact of strain on deviance is conditioned by the personal and social context in which strain is experienced. Agnew identifies a series of factors which affect the probability that strain will lead to delinquent outcomes, focusing on factors (1) which serve to constrain delinquent versus nondelinquent coping and (2) that affect the individual's disposition to delinquency. He argues that efficacious individuals and those with supportive social networks should be less likely to resort to deviant or criminal behavior in response to strain, while those surrounded by deviant peers should be more likely to have access to delinquent coping strategies and would tend to see deviance as an attractive or appropriate response.

Agnew's formulation represents a notable development in deviance theories in two important respects. First, it reflects an emerging trend toward the conceptualization and measurement of intervening psychological mechanisms that often figure prominently in deviance theories but are seldom explicitly modeled (see also Agnew 1995a). One can see this trend manifested, for example, in recent work on Sutherland's differential association theory. By measuring some of the intervening psychological variables proposed in

Sutherland's theory, Warr and Stafford (1991) seek to identify the primary mechanism through which associations with unconventional others foster delinquent behavior. Results from their analysis suggest that attitude transference is a less plausible intervening mechanism than are factors such as modeling and selective reinforcement (see Akers et al. 1979). Second, Agnew's work seeks to draw from literature in the sociology of mental health concerning the complex relationships among stressful experiences, negative emotion, and social behavior. By positing relationships among strain, anger, and deviant behavior that are conditioned by an individual's social and personal resources, general strain theory can be viewed as an attempt to incorporate stress-diathesis models of mental illness into criminological theory. Such models, in which mental illness is seen as a consequence of stressors occurring in the context of some underlying social or constitutional vulnerability (e.g., Depue and Monroe 1986; Monroe and Simons 1991), have proven to be quite useful in explaining the variable impact of stressful life events on diverse measures of distress (see Wheaton 1990; Aseltine and Kessler 1993; Aseltine 1996).

To this point, however, the empirical evidence concerning general strain theory is decidedly mixed. The wealth of evidence suggesting that a variety of negative events and conditions (e.g., negative life events, poor relations with adults, school/peer hassles) are related to delinquency and drug use (Hoffman and Su 1998), and that this relationship persists when traditional measures of parental control and peer influence are held constant (Agnew 1985; Agnew and White 1992; Paternoster and Mazerolle 1994) is certainly consistent with general strain theory. In contrast, there is contradictory evidence concerning the ancillary hypothesis that the degree to which strain is related to deviant behavior is conditioned by the adolescent's personal and social resources. Though Agnew and White (1992) present cross-sectional data showing strain to have less of an impact on deviant behavior among youths with higher levels of social support and self-efficacy, and to have more of an impact among youths whose peers are delinquent, recent longitudinal tests have offered no support for this hypothesis (Hoffman and Su 1997; Paternoster and Mazerolle 1994). Ultimately, however, the

future of general strain theory rests on the validity of its core hypothesis—that negative emotion mediates the association between diverse measures of strain and a variety of deviant behaviors—which remains in need of further examination. An early study by Agnew (1985) ostensibly confirms the mediating role of anger in the relationship between strain and various measures of delinquency, but is methodologically limited by the cross-sectional nature of the data and the use of measures with incompatible recall periods. More recently, Brezina (1998) provides clear evidence in support of the intervening affective mechanism linking strain with deviance, yet this study is limited to one form of strain (parental maltreatment) and a measure of delinquency that is dominated by acts of interpersonal aggression. This study is further limited by a two-wave panel design that precludes controls for prior strain and delinquency, thus raising questions about the causal pathways depicted in the model. Thus, to date there remains scant empirical evidence to support the core hypotheses of general strain theory.

METHOD

Sample

Data for this analysis come from a prospective study of stress, mental health, and social adaptation during the adolescent and young adult years. The first wave of the study, conducted in 1988, was based on a systematic probability sample of ninth, tenth, and eleventh graders residing in Revere, Watertown, and Westford, three communities in the greater Boston metropolitan area. Of the 1,576 students selected, 61 (3.9%) did not participate due to parental refusal. One-thousand-two-hundred-eight (77%) of the selected students were interviewed for the first wave of the study. These youths were subsequently re-interviewed in 1989 and 1990, at approximately one year intervals. In Wave 2, 1,036 of these youths were re-interviewed, constituting 86 percent of those initially interviewed. In the third wave of the study, followups were conducted with 939 of those interviewed in 1988, which is over 90 percent of those interviewed in Wave 2, and 78 percent of the initial study group. Professional interviewers from the Center for Survey Research at the University

of Massachusetts-Boston conducted confidential, in-person interviews in locations chosen by the respondents (primarily in their homes, schools, or the public library).

These students may be regarded as representative of the public high school population in these communities, which were selected to represent a range of socioeconomic status and life situations. Descriptive characteristics of the initial sample are summarized in Table 1. The median household incomes of the three communities according to the 1990 census were \$36,590, \$43,490, and \$60,566. As a whole, the sample does not include many youths from extremely disadvantaged circumstances, and is almost entirely Caucasian (94%), with Black, Hispanic, and Asian youth each comprising less than 2 percent of the sample. Concerning religious affiliation, the majority of youths in the sample are Catholic (68%), a proportion reflecting the ethnic and religious character of the Boston metropolitan area.

Interviewers attempted followup interviews for the entire sample regardless of geographic location, and they conducted telephone interviews for the small number of respondents that had moved out of the Boston area. Although panel attrition over the first three study waves was minimal and few of the predictors in this analysis were significant predictors of attrition (see the Appendix), boys, those of lower socioeconomic status, those experiencing greater levels of life stress, and those reporting

TABLE 1. Sample Characteristics (N = 1,208 at Time 1)

<i>Sex</i>	
Male	43%
Female	57%
<i>Grade</i>	
9th	32%
10th	35%
11th	33%
<i>Parents' Employment</i>	
Mother employed	77%
Father employed	95%
<i>Mother's Highest Education</i>	
8th grade or less	5%
Some high school	7%
High school	42%
Some college or technical	17%
College graduate or more	28%
<i>Father's Highest Education</i>	
8th grade or less	6%
Some high school	8%
High school	34%
Some college or technical	13%
College graduate or more	39%

higher levels of marijuana use in the baseline interview were significantly less likely to be re-interviewed in Waves 2 and 3. The slightly lower rate of re-interview among marijuana users raises the possibility that the most seriously troubled youths in the original sample are under-represented in this analysis.

Measures

To test the generality of general strain theory, we adapted three separate measures of delinquency and drug use from the "Monitoring the Future" studies of Bachman, Johnston, and O'Malley (1987) and employed them in these analyses. First, we created separate subscales of delinquent acts to distinguish relatively nonaggressive acts from more aggressive behavior. We draw the Wave 3 measure of nonaggressive delinquency from six self-report items representing four types of delinquent offenses: stealing or trying to steal things, including shoplifting; running away from home; driving while impaired; and joyriding, or taking a car without permission. In Wave 1 only four of these items were available, resulting in a truncated measure of nonaggressive delinquency in the initial wave of the study. Although it would be desirable to have identical measures of delinquency at these two points in time, this difference in measurement does not undermine the analysis because we are controlling for the correlation between these measures over time and are not computing the arithmetic difference between Wave 1 and Wave 3 scores. The correlation between the Wave 3 measure used in this analysis and a truncated four-item measure that is identical to that used at Wave 1 exceeds .9, which suggests that the two are measuring the same thing. The measure of aggression delinquency in both Waves 1 and 3 is based on youths' self-reports of purposely damaging property, carrying a hidden weapon, and getting into physical fights. For each delinquency measure we created a summary index of the number of times each type of offense was committed during the past year. Finally, drug use is represented by the frequency of marijuana use in the past year, an ordinal scale ranging from "no times" to 10 or more times on a five point scale; higher values on this variable indicate more frequent use of marijuana. To enhance the validity of reports of illicit drug use, this

item was assessed in a self-administered format (Turner, Lessler, and Devore 1992). The sample distributions on these measures are consistent with norms from nationally representative samples. Approximately 35 percent of youths in this study reported committing one or more delinquent acts in the past year (Wave 3), a rate that is comparable to that observed in the 1983 National Youth Survey (42% among whites aged 18–25; see Elliott, Huizinga, and Menard 1989). The annual prevalence of marijuana use among these youths (27%) is marginally higher than that observed in a nationally representative sample of 10th and 12th graders (17 to 24%, respectively) as reported by Johnston, O'Malley, and Bachman (1997).

To adequately capture the range of strains occurring during adolescence, we incorporate three distinct measures of family and peer relationship stresses and negative personal experiences into the analysis. All three are derived from measures that are widely used in stress research, which Agnew (1992) endorses as an appropriate framework for investigating general strain theory. *Life stresses* is a summary index of negative life events experienced by the respondent in the past year. This unweighted index is derived from a 61-item measure of life events that draws from instruments developed most recently by Compas, Davis, and Forsythe (1985) and others (Coddington 1972; Johnson and McCutcheon 1980; Newcomb, Huba, and Bentler 1981). Events experienced by respondents include school problems, money problems, job difficulties, rape or victimization, pregnancy, leaving home, health problems, parent and sibling health problems, parent and sibling legal problems, parental separation or remarriage, relationship problems between parents, parent job difficulties, unwanted pregnancy of sibling, parental death, and change in household composition. *Family conflict* is a three-item measure of youths' frequency of arguments with mother and father (separately) and the degree to which "family members fight, argue, or disagree with each other." For the first two items, responses range from "practically every day" to "never" on a six-point scale; for the last item, responses range from "very often" to "never" on a four-point scale. Higher values indicate greater levels of conflict. The reliability of the scale (Cronbach's alpha) is .60. *Peer conflict* is a three-item measure of the frequency with

which peers "criticize you," "make too many demands on you," and "create tensions or arguments while you are around them," with responses range from "often" to "never" on a four-point scale. Higher values indicate greater levels of conflict. The reliability of the scale (Cronbach's alpha) is .63.

We include separate measures of anger and anxiety in the analysis. *Anger* is measured by the hostility subscale of the Symptom Checklist-90 (Derogatis 1977), a five-item measure of the frequency of hostile, aggressive, and resentful feelings over the past month. Respondents were asked how distressed they had been over the past month by problems such as: (1) frequent arguments, (2) uncontrollable outbursts of temper, (3) urges to beat or harm someone, (4) urges to break things, or (5) shouting or throwing things. Responses range from "not at all" to "extremely" on a five-point scale, with higher values indicating greater levels of anger. The reliability of the scale (Cronbach's alpha) is .85. *Anxiety* is a 10-item measure of the frequency of feelings of annoyance and irritation, nervousness, or tension experienced during the past month (rated on the same response scale as hostility), and is also derived from the Symptom Checklist-90. Cronbach's alpha for this scale is .84. We include a third measure of emotional distress, depressive symptoms as measured by the Center for Epidemiologic Studies Depression Scale (Radloff 1977), in earlier analysis. Because it was unrelated to the measures of delinquency and drug use used in the analysis, and because it overlaps considerably with the measure of anxiety ($r = .6$), we dropped it from the analysis.

Several measures of youths' personal resources and social context are used to test for conditional associations between strain and deviant behavior. *Mastery* is a seven-item index of one's sense of control and personal efficacy (Pearlin et al. 1981). Responses range from "strongly agree" to "strongly disagree" on a four-point scale, with higher values indicating greater levels of mastery. Cronbach's alpha for this index is .74. *Family attachment* is a three-item measure assessing the degree to which the parents (1) make the child feel loved and wanted and (2) trust the child, and the extent to which the child enjoys being with family members, adapted from (Procidano and Heller 1983). Responses range from "very true for you" to "not at all true for you" on a four-

point scale, with higher values indicating greater levels of attachment. The reliability of the scale (Cronbach's alpha) is .71. *Self-esteem* is a 10-item scale created by Rosenberg (1965) to assess feelings of self-concept or worthiness (e.g., I am a useful person to have around; I feel that I'm a person of worth, at least as much as others). The reliability of the scale (Cronbach's alpha) is .88. Finally, the measures of *exposure to delinquent peers* consist of peer's own self-reports of aggressive behavior, nonviolent delinquency, and marijuana use over the past year. These measures of peer deviance were created by asking respondents to provide the names of the friends that they "spent most of their time with at school." Up to five mentions were recorded. Because the study sampled large proportions of each of the three communities' high schools, a substantial fraction of respondents ($n = 781$, or 83% of the Wave 3 sample) could be matched with at least one friend who was also interviewed in all three waves. Data from students who had more than one friend in the sample were averaged to produce aggregate measures of delinquency and drug use in that individual's peer group.

We also include four demographic control variables often linked to problem behavior in adolescence in the analysis. All demographic variables were measured in Wave 1. We assessed family's standard of living through a measure usually employed in studies of adult populations to assess income adequacy (Dubnoff 1985). The youths were asked, "What best describes your family's standard of living—would you say you are very well off, living very comfortably, living reasonably comfortably, just getting along, nearly poor, or poor?" We use a categorical indicator of family structure, distinguishing youths in intact two-natural-parent families (coded 1) from those in single-parent or stepparent families (coded 0). Finally, we include controls for youth's sex and age.

We assigned missing values on single-item measures to the sample mean. We assigned respondents with missing data on fewer than two-thirds of the items comprising multi-item scales to the sample mean on those items. We assigned those with invalid responses on more than two-thirds of the items comprising a scale to the sample mean of the scale. The amount of missing data in this sample is extremely small; the number of cases with missing data (on any

of the items in a scale) did not exceed 3 percent of the sample for any measure.

Hypotheses

As discussed in the introduction, this analysis will attempt to test general strain theory by tracing the linkages among measures of stressful life events, strained social relationships, anger and anxiety, and deviant behavior. One might argue, however, that the sources of deviance examined in this analysis are not unique to general strain theory and are in fact consistent with competing theories of deviance. For example, Hirschi's control theory (1969) would predict that negative relations with parents would be positively associated with deviance, since such conflict would be a marker of low levels of parental attachment and hence low levels of conventional bonding. Agnew (1995a) presents an extensive discussion of the overlap between control, differential association, and general strain theory, and points out that the fundamental differences between these theories lies in the mechanisms through which these variables are tied to deviant behavior. In contrast to other deviance theories, general strain theory posits a distinct affective mechanism through which family and peer relationships are causally associated with deviant behavior. Thus, we hypothesize that:

H₁: The *total effects* of family conflict, peer conflict, and negative life events on deviant behavior will be strong and positive, such that higher levels of strain are associated with higher levels of deviance, and

H₂: The *total effects* of family conflict, peer conflict, and negative life events will be explained by their *indirect effects* on deviant behavior through the measures of anger and anxiety.

In keeping with one of the central propositions of general strain theory, we also expect this mechanism to be observed for disparate types of deviant behavior:

H₃: The mediational model linking strain with deviance through anger and anxiety will be observed for a range of deviant outcomes, including acts of violence, nonviolent delinquency, and marijuana use.

Finally, Agnew (1992) argues that the relationship between strain and deviant behavior is conditioned by youths' personal and social resources and peer context (although he is not

specific concerning the role of affective variables in this conditional process):

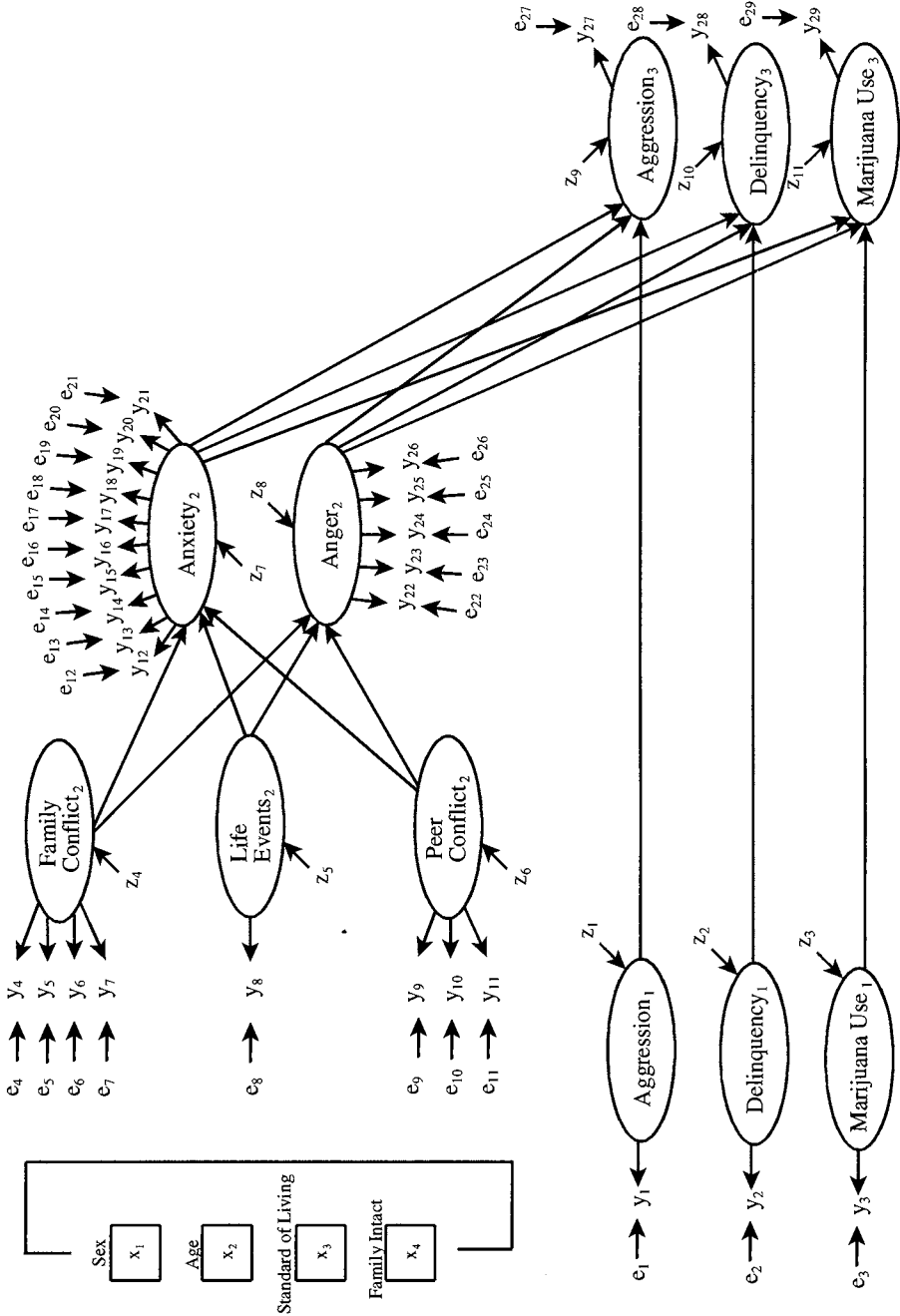
H₄: The associations between strain and deviance will vary by youths' levels of personal resources (mastery), social resources (family attachment), and social context (exposure to delinquent peers), such that stronger effects of strain on deviant behavior will be observed among those with lower levels of mastery, self-esteem, and parental warmth, and greater exposure to delinquent peers.

Specification of the Model

To examine the associations among the measures of strain, anger and anxiety, and adolescent delinquency and drug use over the three study waves, we estimated covariance structure models using LISREL VIII (Joreskog and Sorbom 1993). The three-wave panel design enables us to estimate the effects of strain, anger, and anxiety on delinquency using temporally appropriate measures, thus yielding relatively unambiguous causal pathways among these constructs. In particular, this design minimizes the possibility that delinquency is the cause, rather than the consequence, of troubled social relationships and other forms of strain, a possibility that cannot be ruled out in previous tests of this theory.

The basic features of the model are presented in Figure 1. The causal pathways depicted in this figure—Time 2 measures of family and peer conflict, life stress, and anger and anxiety are used to predict changes in behavior from Time 1 to Time 3—are dictated by variations in the reference periods for the independent and dependent measures. Drug use and delinquency were assessed over the past year, while the measures of family and peer conflict, anxiety, and anger reflect conditions pertaining at or about the time of the interview. As a result, paths estimating the contemporaneous influence of these variables on delinquency and drug use (i.e., using the measures of delinquency and drug use at Time 2) would produce a model in which these measures predict *past* instances of deviance. The inadequacies of this type of model have been widely discussed in the deviance literature (e.g., Aseltine 1995; Kaplan, Martin, and Robbins 1984; Greenberg 1985; Paternoster 1988; Elliott et al. 1985; Thornberry et al. 1991).

FIGURE 1. Measurement Model for Associations of Strain, Anger and Anxiety, and Adolescent Aggression, Delinquency, and Marijuana Use



Testing the hypotheses identified above requires that we establish causal pathways from the measures of strain, anger and anxiety, and subsequent delinquency and drug use. To do this we estimated direct paths from the five measures of strain and anger and anxiety measured at Time 2 to the three measures of deviance measured at Time 3. Testing the core tenet of general strain theory—that the relationship between strain and deviance is mediated by anger and anxiety—further requires the specification of direct paths from family conflict, peer conflict, and negative life events to the measures of anger and anxiety in order to estimate the indirect effects of strain on deviance through these mediating variables. The model also contains direct paths from each of the measures of delinquency and drug use at Time 1 to the Time 3 assessments of these outcomes, which allows us to interpret the effects of strain and anger and anxiety as measures of *change* in deviant behavior over time (see Kessler and Greenberg 1983). Since it is also possible that deviance may be the cause and not the consequence of relationship strains and negative emotions, we estimated direct paths from the three measures of deviance at Time 1 to the five endogenous measures of strain and anger and anxiety at Time 2 (although these paths are omitted from Figure 1 for the sake of clarity). Finally, we treat associations among the three measures of strain (e.g., the relationships between family conflict, life events, and peer conflict), the two measures of anger and anxiety, and the three deviance measures as unanalyzed correlations (through correlated errors in equations).

Concerning the exogenous factors, we specified direct paths from the four demographic variables to all Time 1 and Time 2 factors. Although the deviance literature suggests that we are likely to observe robust associations between these variables and deviance at a given point in time (Farrington 1986; Gottfredson and Hirschi 1990), it is not necessarily the case that we will observe associations between these variables and *changes* in deviance over time. Hence, we fixed the initial model paths from the exogenous factors to the Time 3 measures at zero, with this assumption subject to modification based on the results produced by LISREL.

Parameters from the measurement model are presented in Table 2. We treated all four of the demographic variables as observed.

Because the measures of delinquency and negative life events are summary indices consisting of diverse, somewhat loosely intercorrelated experiences and behaviors, we also treated these measures as observed. As is indicated by the factor loadings presented in this table, reliabilities of 1.0 were assumed for the measures of gender and age. Since, however, it would be unrealistic to assume perfect reliability for the other single-indicator factors, their reliabilities were fixed at .85, resulting in factor loadings of $(.85)^{1/2} = .92$. (To examine the impact of this assumption on the results presented below, we conducted a series of sensitivity analyses in which the reliabilities for the single indicator factors were alternately fixed at .65, .75, and .95. The results from these analyses did not depart in any meaningful way from those presented in Table 4). For the remaining constructs, the unstandardized lambda coefficients indicate a relatively high degree of intercorrelation among the items loading on these latent factors. Although there are strong intercorrelations among the items measuring anger and anxiety, and to a lesser extent among the items measuring conflict with family and peers, alternative specifications in which we constrained all of these items to load on a single pair of latent factors did not yield an acceptable fit to the data. To prevent the blurring of theoretically and conceptually distinct constructs, we did not allow observed variables to load on more than one latent factor.

RESULTS

Model estimation began with the restricted model described above, which, in addition to the constraints on gamma and lambda- γ , did not allow for correlated measurement error among the observed variables (i.e., in theta epsilon). The initial model provided a poor fit to the data. The chi-square statistic for the initial model was 1,308.3 (df = 383), with a root mean squared error of approximation (RMSEA) of .051 and an adjusted goodness of fit index (AGFI) of .88 (see Long 1983 and Browne and Cudeck 1993 for discussions of model fit statistics). The modification indices indicated that the poor fit of this model could primarily be attributed to the absence of correlated measurement errors among the observed variables. A total of 47 separate parameters in theta epsilon could be freed while still allow-

TABLE 2. Parameter Estimates for the Measurement Model

Latent Construct	Observed Variables	Unstandardized
Sex	Sex	1.00
Age	Age	1.00
Living Standard	Living Standard	.92
Family Status	Family Status	.92
Aggression ₁	Aggression	.92
Delinquency ₁	Delinquency	.92
Marijuana Use ₁	Marijuana Use	.92
Family Conflict ₂	Family members fight	.41
	Respondent argues with father	.82
Peer Conflict ₂	Respondent argues with mother	1.00
	Friends make many demands on Respondent	.57
	Friends criticize Respondent	.65
Life Events ₂	Friends create tensions around Respondent	1.00
	Life Events	.92
Anger ₂	Respondent has temper outbursts	1.02
	Respondent has urges to injure someone	.91
	Respondent has urges to break things	.95
	Respondent gets into frequent arguments	.97
Anxiety ₂	Respondent shouts or throws things	1.00
	Respondent feels nervousness or shaking	.78
	Respondent feels trembling	.46
	Respondent feels scared for no reason	.66
	Respondent has heart pounding	.61
	Respondent feels tense	.83
	Respondent has spells of panic	.51
	Respondent feels restless	.82
	Respondent feels something bad will happen	.85
	Respondent has frightening thoughts	.72
	Respondent feels easily annoyed	1.00
Aggression ₃	Aggression	.92
Delinquency ₃	Delinquency	.92
Marijuana Use ₃	Marijuana Use	.92

Note: Subscripts following variable names indicate study wave. Cell entries contain unstandardized lambda coefficients for latent constructs: Factor loadings equal to 1.00 or .92 represent fixed coefficients.

ing the model to be identified. While the bulk of these involved correlated errors among the items measuring anxiety (18 parameters) and anger (5 parameters), there was also a significant degree of correlated measurement error among the items measuring family conflict and anger (7 parameters), family conflict and anxiety (3 parameters), peer conflict and anxiety (4 parameters), and anger and anxiety (7 parameters). In addition, the modification index for gamma indicated that direct paths from gender to the two delinquency measures at Time 3 should be estimated. Freeing these 49 parameters resulted in a significant improvement in the fit of the model. The overall model chi-square was reduced to 515.7 ($df = 334$), yielding a statistically significant difference in chi-square of 792.6 ($df = 49$; $p < .01$) between these models, with a RMSEA of .024 and an AGFI of .95. These fit statistics indicate that the revised model provided an excellent fit to the data, and further examination of the modification indices showed that model fit could

not be improved by freeing any additional structural parameters or measurement error terms.¹

The first question to be addressed in this analysis concerns Hypothesis 1: Is exposure to stresses and relationship strains positively associated with deviant conduct? The results presented in Table 3 indicate that this is indeed the case. The total effects of stressful life events on all three measures of deviance are positive and statistically significant. The standardized total effects of life events on these outcomes are modest in magnitude, ranging between .15 and .20. Similarly, the total effects of family conflict on marijuana use ($B = .06$, $p < .05$) and aggression ($B = .07$, $p < .05$) are also positive and statistically significant, albeit of slightly lower magnitude. Conflict with peers, in contrast, is not significantly related to any of the three deviance measures.

These results raise the question of whether the total effects observed in Table 3 are due, either wholly or in part, to the mediating rela-

TABLE 3. Total Effects of Family Conflict, Peer Conflict, and Life Events on Aggression, Delinquency, and Marijuana Use

	Aggression ₃		Delinquency ₃		Marijuana Use ₃	
	B	B	B	B	B	B
Family Conflict ₂	.07*	.11	.05	.08	.06*	.10
	(.03)		(.03)		(.03)	
Peer Conflict ₂	.01	.01	.03	.02	-.01	-.01
	(.05)		(.05)		(.04)	
Life Events ₂	.09*	.15	.12*	.20	.09*	.18
	(.02)		(.02)		(.02)	

* $p < .05$

Note: Subscripts following variable names indicate study wave. Numbers in parentheses are standard errors.

tionships hypothesized in general strain theory. To answer this question we must begin by examining the direct effects among the measures of strain, anger and anxiety, and deviant behavior. Standardized structural coefficients capturing the relationships of interest are presented in Figure 2; only coefficients significant at the .05 level are presented. Unstandardized structural coefficients and standard errors for all variables in the model are presented in Table 4.

Considering first the associations among the three measures of strain and anger and anxiety, the results presented in Figure 2 indicate that negative life events, family conflict, and peer conflict are all strongly associated with both anger and anxiety. The standardized path coefficients capturing the direct effects of the former on the latter indicate that family conflict appears to be the strongest predictor, with path coefficients of .44 for its effect on anger and .29 for its effect on anxiety. In contrast, we observe weaker associations between peer conflict and the measures of anger and anxiety, with standardized path coefficients ranging from .19 for anxiety to .14 for anger, although both effects do achieve statistical significance at the .05 level. In all cases, exposure to greater levels of stress and strain is predictive of higher levels of anger and anxiety.

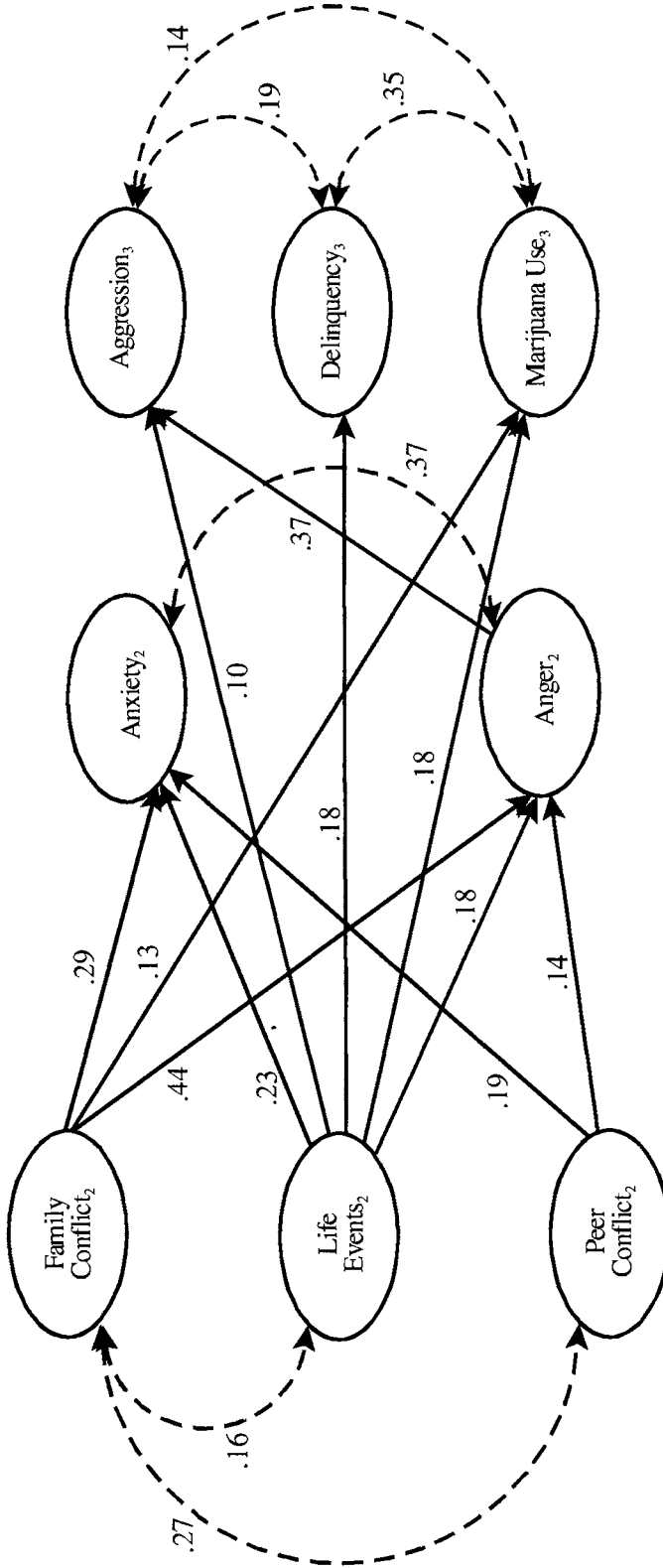
The second part of the causal chain linking strain with deviance under general strain theory concerns the associations among anger and anxiety and delinquency and drug use. Here the results presented in Figure 2 are not as encouraging. The only significant direct effect among these variables involves the relationship between anger and aggression. The standardized path coefficient of .37 indicates a strong and positive association between these factors, such that higher levels of anger are associated with higher levels of aggressive behavior. In

contrast, anger is not significantly associated with either delinquency or marijuana use, nor is anxiety associated with any of the measures of deviance.

The net result of the direct effects linking strain, anger and anxiety, and deviance yields some qualified support for Hypothesis 2. Clearly, there is a significant relationship between family conflict and aggression that is entirely mediated by anger. The unstandardized total effect of family conflict on aggression is .07 (see Table 3), which is completely explained by the product of the direct effects linking this stressor to anger and anger to this form of delinquency (see Table 4: $.32 \times .34 = .11$). However, this is the only mediating pathway for which this is the case. Although a significant total effect of stressful life events on aggression is also observed, less than half of this total effect (.09) can be accounted for by the indirect effects of life events on aggression through anger (Table 4: $.12 \times .34 = .041$). In contrast, the absence of significant effects of anger on either delinquency or marijuana use indicates that the mediating mechanism proposed in general strain theory cannot account for the effects of any of the measures of stress and strain on these forms of delinquency. Furthermore, the failure of anxiety to be significantly associated with any of the deviance measures suggests that it cannot serve as a mediating link between strain and deviance.

Finally, the results presented in Table 4 reveal the presence of reciprocal associations among deviant behavior and youths' stressful experiences and affective states. The structural coefficients capturing the effects of all three measures of deviance at Time 1 on negative life events, marijuana use and aggression on anger, and aggression on family conflict are positive and statistically significant, indicating that prior deviant behavior is associated with the greater incidence of life stress-

FIGURE 2. Covariance Structure Model for Testing General Strain Theory



Note: All paths shown above are significant at the .05 level (two-tailed test). Time 1 measures of aggression, delinquency, marijuana use, and the control variables were included in the model but are not shown in the figure.

TABLE 4. Unstandardized Coefficients for Model Predicting Aggressive Delinquency, Other Delinquency, and Marijuana Use

Independent Variables	Dependent Variables										
	Marijuana Use ₁	Delinquency ₁	Aggression ₁	Family Conflict ₂	Peer Conflict ₂	Life Events ₂	Anger ₂	Anxiety ₂	Marijuana Use ₃	Delinquency ₃	Aggression ₃
Sex	.00 (.03)	-.06* (.03)	-.43*** (.04)	.26*** (.08)	-.12* (.05)	.03 (.07)	-.03 (.05)	.24*** (.05)	—	-.17*** (.04)	-.15*** (.05)
Age	.08*** (.02)	.01 (.01)	.02 (.02)	.00 (.04)	.01 (.02)	.05 (.04)	.02 (.02)	.06* (.02)	—	—	—
Living Standard	-.19* (.09)	-.19* (.08)	-.36** (.13)	-.43 (.23)	-.53*** (.14)	-.51* (.20)	.13 (.13)	-.16 (.14)	—	—	—
Family Status	-.09 (.05)	-.05 (.05)	-.21** (.08)	-.02 (.14)	-.13 (.08)	-.13 (.12)	-.08 (.08)	-.15 (.09)	—	—	—
Marijuana Use ₁	—	—	—	-.11 (.10)	-.07 (.06)	.58*** (.09)	.28*** (.06)	.13 (.07)	.53*** (.05)	.18** (.06)	.01 (.06)
Delinquency ₁	—	—	—	.23 (.12)	-.05 (.08)	.41*** (.11)	.13 (.07)	.07 (.08)	.02 (.06)	.21*** (.07)	.00 (.07)
Aggression ₁	—	—	—	.27*** (.07)	-.09 (.05)	.18** (.07)	.13** (.04)	.04 (.05)	.05 (.03)	.04 (.04)	.29*** (.04)
Family Conflict ₂	—	—	—	—	—	—	.32*** (.04)	.22*** (.04)	.08* (.03)	.02 (.04)	-.02 (.04)
Peer Conflict ₂	—	—	—	—	—	—	.16** (.05)	.22*** (.06)	-.01 (.04)	.01 (.05)	-.03 (.05)
Life Events ₂	—	—	—	—	—	—	.12*** (.03)	.16*** (.03)	.10*** (.02)	.11*** (.03)	.06* (.02)
Anger ₂	—	—	—	—	—	—	—	—	-.08 (.06)	.10 (.08)	.34*** (.08)
Anxiety ₂	—	—	—	—	—	—	—	—	.04 (.05)	.01 (.06)	-.08 (.06)
R ²	.05	.02	.12	.07	.06	.23	.48	.34	.29	.19	.33

****p* < .001; ***p* < .01; **p* < .05

Note: Subscripts following variable names indicate study wave. Unstandardized structural coefficients are presented, with standard errors in parentheses. Cell entries represented by a dashed line indicate parameters constrained to be zero.

es, troubled social relationships, and anger. Although inconsistent with a longitudinal analysis by Agnew (1989), these results are consistent with those from other recent investigations (e.g., Thornberry et al. 1994; Aseltine 1995) that show reciprocal effects of deviant behavior on the relationship problems and affective states that are its purported causes. This finding raises serious questions concerning the credibility of cross-sectional investigations of this theory, and it illustrates the value of using covariance structure models drawing on multi-wave panel data to capture the reciprocal causal associations embedded in the stress process.

Conditional Effects of Strain on Delinquency and Marijuana Use

As stated in the introduction, one ancillary hypothesis of general strain theory is that the effects of strain on delinquency and marijuana use will be dependent upon one's social and personal resources as well as the extent to which deviance is present in the immediate social environment. Previous attempts to test this hypothesis have focused exclusively on the extent to which the effects of strain on deviance are conditioned by such moderator variables. The stress and coping literature contains ample evidence, however, that various personal and contextual factors exert a great deal of influence on individuals' affective responses to stressful events and situations (e.g., Wheaton 1990; Gore and Aseltine 1995; Mattlin, Wethington, and Kessler 1990). Although this issue has gone unaddressed in prior tests of general strain theory, these findings suggest that moderating factors such as mastery and self-efficacy, social support, and deviant peer contexts may produce differences in the affective mechanisms proposed in general strain theory. For instance, efficacious individuals might be less prone to anger or anxiety when experiencing stressful events and situations, which would imply an interaction between strain and self-efficacy in the prediction of these outcomes. Alternatively, while strain may still produce these negative emotions, a strong sense of self might reduce the likelihood that anger will be acted out in a deviant fashion, implying an interaction between self-efficacy and anger in predicting deviance. Testing for effects of this nature

requires the estimation of a more complex series of interactions than have previously been tested.

To examine this hypothesis, Time 2 measures of peer aggression, delinquency and marijuana use, family attachment, self-esteem, and mastery were introduced into the analysis as moderator variables. Because of the difficulties in estimating conditional effects of this nature in covariance structure models, these tests were conducted in a more conventional manner by including product terms for the two-way interactions involving strain, anger, and anxiety with each moderator variable in multiple regression equations. These regression equations were analogous to the path models presented in Figure 2, with each model containing only one interaction term. In estimating these models we assumed that the conditional effects of peer deviance would be outcome-specific, that is, that peer marijuana use would condition the effects of strain on one's own marijuana use, but not on delinquency or aggression. This assumption reduced the total number of interactions tested to 96. To aid our interpretation of these associations, each equation yielding a significant interaction effect was then re-estimated separately among those above and below the means on the moderator variable in question. This strategy enabled us to plot separate slopes for the effects of the measures of strain, anger, and anxiety among those at high and low levels of the moderator variables.

Results from this second set of analyses are presented in Table 5; they provide little support for Hypothesis 4. Only 10 of the 96 conditional models estimated yielded a significant interaction effect, and of those 10, four are contrary to the effects that would be predicted by general strain theory. For instance, the occurrence of stressful life events in the context of high levels of peer delinquency does not predict delinquency ($B = .010$, $SE = .036$), while such stresses are strongly associated with delinquency among those with more conventional peers ($B = .072$, $SE = .018$). This pattern of effects, although contrary to that which would be predicted by general strain theory, is substantially similar to that reported by Paternoster and Mazerolle (1994) and Hoffman and Miller (forthcoming). However, one noteworthy finding emerging from this analysis is that most of the significant interaction effects that are consistent with the predic-

TABLE 5. Conditional Effects of Strain, Anger, and Anxiety on Adolescent Deviance

PREDICTOR * MODERATOR	→ DEPENDENT VARIABLE	Below the Mean		Above the Mean	
		B	SE	B	SE
Family Conflict ₂ * Peer Marijuana Use ₂	→ Anxiety ₂	.666*	(.194)	-.071	(.328)
Peer Conflict ₂ * Self-esteem ₂	→ Anxiety ₂	1.514*	(.515)	1.154*	(.407)
Life Events ₂ * Family Affect ₂	→ Anger ₂	.456*	(.082)	.341	(.566)
Family Conflict ₂ * Peer Delinquency ₂	→ Anger ₂	.301*	(.131)	.797*	(.194)
Family Conflict ₂ * Self-esteem ₂	→ Anger ₂	.316*	(.158)	.738*	(.147)
Peer Conflict ₂ * Self-esteem ₂	→ Anger ₂	1.197*	(.313)	.139	(.281)
Peer Conflict ₂ * Peer Marijuana Use ₂	→ Marijuana Use ₃	-.122	(.069)	.279	(.201)
Life Events ₂ * Peer Delinquency ₂	→ Delinquency ₃	.072*	(.018)	.010	(.036)
Anger ₂ * Family Affect ₂	→ Delinquency ₃	.020*	(.009)	-.031	(.033)
Anger ₂ * Self-esteem ₂	→ Aggression ₃	.030*	(.010)	.058*	(.012)

* $p < .05$

Note: Subscripts following variable names indicate study wave. Only significant interaction terms are presented. Each row presents coefficients and standard errors for the effects of the predictor variable on a particular outcome variable among those above and below the mean on the moderator in question.

tions of general strain theory directly involve anger and anxiety. For instance, family conflict is more strongly associated with anger among those with more delinquent peers ($B = .797$, $SE = .194$), as compared to those whose peers are more conventional ($B = .301$, $SE = .131$). Moreover, anger has a stronger association with delinquency among those with low levels of family attachment ($B = .020$, $SE = .009$) than among those with high levels of family attachment ($B = -.031$, $SE = .033$). This pattern of conditional associations involving the measures of anger and anxiety—that is, where the occurrence of strain among those with delinquent peers produces a dramatic increase in levels of anger and hostility, or where anger has a stronger effect on delinquency among those with lower levels of attachment to family—is entirely consistent with the affective mechanism proposed in general strain theory, though it has not previously been articulated by strain theorists. However, the number of significant interaction effects obtained in this analysis is only slightly better than would be expected by chance (e.g., only 6 of the 96 interaction effects estimated), providing little support for this aspect of general strain theory.

DISCUSSION

By examining its four principal hypotheses, this study presents the most comprehensive test to date of general strain theory. To our knowledge, this is the first study in which measures of anger and anxiety were included as mediators in a covariance structure model of

the strain-deviance association using three waves of panel data. Overall, results from this analysis provide limited support for general strain theory. On the positive side, strain in the form of negative life events and conflict with family members is indeed significantly and positively related to adolescent deviance. Moreover, we observed the indirect effects predicted by this theory—that strain would be related to delinquency through anger and anxiety. Thus, this analysis has confirmed the role of anger in mediating the impact of negative events and troubled social relationships on some forms of adolescent misconduct. However, these effects were obtained only for the delinquency subscale consisting of violent and aggressive acts, and none of the measures of strain or anger and anxiety were significantly related to marijuana use, which suggests that general strain theory may not generalize to nonviolent forms of deviance. Furthermore, support for the ancillary hypothesis that factors such as exposure to deviant peers, mastery and self-efficacy, and parental support would alter the impact of strain on problem behavior was very limited, despite some favorable results concerning the role of personal and social resources in conditioning the affective mechanism associated with general strain theory.

In spite of the limited support for general strain theory observed in the present analysis, this theory continues to hold promise as a means of furthering our understanding of the etiology of deviance. This promise is due in no small part to Agnew's efforts to draw on concepts and perspectives from the sociology of mental illness, principally from research draw-

ing on the stress and coping paradigm. Accessing this research not only enriches his conceptualization of strain by extending it beyond goal-opportunity disjunctions, but also provides a body of supportive literature in which the effects of stressful life events and conflictual social relationships on both negative emotions and problem behavior have been repeatedly demonstrated. Moreover, the stress and coping literature provides a theoretical and empirical foundation for further investigation of the variable effects of strain on deviant behavior. The notion that stress does not have an equivalent impact on all individuals but varies by a variety of personal and contextual factors—including the individual's cognitive appraisal of the stressor (Lazarus and Folkman 1984), the role context in which the stressor is experienced (Wheaton 1990; Aseltine and Kessler 1993), and the coping behaviors one enacts in response to the stress (Mattlin et al. 1990; Harnish, Aseltine, and Gore 2000)—is a central feature of the stress and coping paradigm. In addition, Agnew's formulation, in which the strain-deviance association is conditioned by one's personal and social resources, is essentially an extension of the stress-diathe-sis model of mental illness (e.g., Depue and Monroe 1986).

Furthermore, the stress and coping literature offers some explanation for the limited generality of general strain theory. This theory is intended to be general in the sense that it applies to a range of deviant and unconventional behaviors, such as minor delinquency and drug use, and not just aggressive and hostile acts. Agnew's effort to formulate a general theory of deviance, while entirely consistent with recent trends in criminology (e.g., Jessor, Donovan, and Costa 1991; Gottfredson and Hirschi 1990; Elliott et al. 1985; Wilson and Herrnstein 1985), is inconsistent with recent findings in stress research that reveal specific etiologic pathways linking particular stressors with particular emotional and behavioral outcomes. Most notable among these are recent studies by Aseltine and Gore (Aseltine, Gore, and Colten 1998; Aseltine and Gore 1993) and Cohen and associates (Cohen et al. 1990), which reveal differing configurations of social stresses precipitating affective disorders, substance use, delinquent behavior, and their co-occurrence. Recent research by Aneshensel, Rutter, and Lachenbruch (1991) has also revealed an important corollary to this finding:

that a particular stressor may precipitate differing mental health problems among different categories of individuals. Taken together, these results suggest that it is perhaps illusory to expect a single unifying theory to account for various forms of deviance and criminality.

Finally, perhaps the most promising avenue for furthering this line of inquiry involves the role of coping behaviors in the etiology of deviance. Agnew (1992) argues that the probability that negative relationships and experiences will result in deviant behavior depends in part on the strategy one uses to cope with such stresses. For example, one might attempt to cope with the loss of a job by cognitively minimizing the importance of the loss (e.g., "I hated that job anyway"), by actively seeking reinstatement or looking for another job, or by trying to reduce the distress associated with this loss (e.g., by doing things that one enjoys, or by taking medication or using recreational drugs). General strain theory could be greatly enriched by drawing upon recent developments in coping research, notably the emphasis on the types of situations for which specific coping styles are most effective, as well as the current emphasis on coping styles or profiles as opposed to specific coping behaviors (e.g., Lazarus and Folkman 1984; Ebata and Moos 1994; Mattlin et al. 1990; Aldwin 1994). The literature on the situational basis for coping and coping efficacy suggests that many coping behaviors are in fact maladaptive and lead neither to successful resolutions of stressful situations nor to the reduction of distress (e.g., Ebata and Moos 1991; Holahan and Moos 1991; Mattlin et al. 1990). Evidence indicates, for example, that emotion-focused coping strategies are tied to higher levels of behavioral problems among adolescents (Compas, Malcarne, and Fondacaro 1988). In other words, efforts to manage the distress associated with stressful experiences in the absence of instrumental, problem-solving behaviors tend to *increase*, not decrease, the probability of delinquent behavior, a finding which would appear to be inconsistent with general strain theory as currently formulated. Thus, to benefit from extant research on stress and coping, strain theory must attend to these complexities.

Limitations

It would be prudent at this point to

acknowledge the limitations of this analysis. This study is based on an essentially all-white sample, and while it does include relatively poor youths, it does not contain many youths from severely disadvantaged circumstances. Also, the sample is restricted to a narrow range of ages within middle to late adolescence. Although the core hypotheses of general strain theory are not restricted to disadvantaged populations or specific age groups (see Agnew 1992; Agnew 1997), empirical generalizations concerning the associations among strain, anger, and delinquency would be strengthened by replications of this analysis in diverse populations of youth. Second, the measures of negative life events and family and peer conflict do not exhaust the many potential sources of strain and life difficulties contributing to the stress process, and further analysis using more comprehensive measures of strain might reveal greater support for general strain theory. In addition, questions concerning the potential for operational confounding among the measures of conflict, anger, and aggressive delinquency may be raised. As discussed in Footnote 1, the estimation of an alternative model that allowed observed items to load on multiple factors did reveal some measurement overlap among the conflict, anger, and delinquency factors, but it did not alter the results presented above. We looked further into this question by creating a truncated measure of anger that excluded items relating to urges to beat or harm someone, urges to smash things, and uncontrollable outbursts of temper. This left as indicators of anger items pertaining to frequent arguments and shouting or throwing things, items which we believe are less likely to be confounded with the measure of aggressive delinquency. Re-estimation of the final model revealed the same pattern of associations involving anger, aggression, and delinquency as was presented above. Nevertheless, further development and refinement of measures of anger and aggression that do not raise such concerns are clearly warranted.

improve model fit, particularly among the measures of family conflict, anger, and both aggressive and nonaggressive delinquency. For example, two items measuring anger—"urges to injure someone" and "gets into frequent arguments"—loaded on the latent family conflict factor, and "urges to injure someone" loaded on both the aggressive and nonaggressive delinquency factors. Although relaxing these constraints was viewed as undesirable due to the potential confounding of conceptually distinct constructs, we did estimate an alternative model in which these items were allowed to load on multiple factors. Results did not differ from those presented here.

APPENDIX. Predicting Sample Attrition in Wave 3: Logistic Regression Results

Predictors	Coefficient
Constant	-2.476 (1.522)
Female	-.331* (.166)
Age	.132 (.076)
Two Parent Family	.332 (.275)
Parents' Education	-1.282*** (.262)
Standard of Living	-.292 (.408)
Life Events	.210* (.097)
Family Support	.007 (.163)
Family Conflict	.118 (.067)
Peer Support	-.016 (.149)
Peer Conflict	-.198 (.136)
Binge Drinking	.205 (.122)
Drinking Frequency	.044 (.059)
Marijuana Use	.235** (.073)
Delinquency	-.058 (.093)
Depression (CESD)	-.204 (.177)

* $p < .05$; ** $p < .01$; *** $p < .001$

Note: Numbers in parentheses are standard errors.

NOTES

1. The modification indices did indicate, however, that loosening the constraints on lambda- γ to allow observed indicators to load on more than one latent factor could

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