

## **Strain, Negative Emotions, and Deviant Coping Among African Americans: A Test of General Strain Theory<sup>1</sup>**

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Although previous research on Agnew's (1992) general strain theory (GST) tends to yield significant effects of strain on negative emotions as well as deviance and crime, results tend to be mixed with regard to (1) the effects of negative emotions on deviance and crime and (2) conditioning factors that Agnew suggests affect the selection of coping strategies. To address these issues, we test hypotheses, derived from GST, about the relationships among strain, negative emotions, and deviant coping by analyzing data from a nationally representative sample of African American adults. Ordinary least squares regression results generally support our hypotheses. First, fully mediating the effects of strain on deviant coping, negative emotions have consistently significant effects on deviance, regardless of whether we use composite or separate measures of inner- and outer-directed emotions and deviance. Interestingly, as hypothesized, the same-directed effects of negative emotions on deviant coping are larger than the opposite-directed ones. Second, while self-esteem and self-efficacy as conditioning factors generally fail to receive empirical support, religiosity is found to significantly buffer the effects of negative emotions on deviance. Implications of our findings for further development of GST are discussed.

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**KEY WORDS:** general strain theory; distress; deviance; African Americans; religiosity.

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## 1. INTRODUCTION

Agnew's (1992) general strain theory represents one of the most important theoretical developments in criminology over the past ten years. Building upon his earlier work on the revision of strain theory (Agnew, 1985, 1989), Agnew's work is a case of "theory elaboration" (Wagner and Berger, 1985) in that his theory is an improvement over its predecessors. Central to this improvement is the increased precision and rigor of the explanatory scheme as well as the scope of the key concept, strain, and its application (e.g., relevance to all social classes rather than primarily to lower class). In addition, Agnew made his theory distinct from classic strain theories by including an affective variable (i.e., negative emotions) in his theoretical model, while also suggesting how non-strain theories could be incorporated into the model. The introduction of Agnew's (1992) theory rejuvenated strain research, which generally shows significant effects of strain on negative emotions as well as deviance and crime.

Previous studies, however, tend to report mixed results in two areas: (1) the effects of negative emotions on deviance and crime and (2) the conditioning factors that Agnew (1992) proposes affect the selection of coping strategies. First, although they observe the hypothesized positive effects of anger on deviance and crime, especially aggression, researchers find the effects of other negative emotions on the dependent variable to be positive, non-significant, or even negative (e.g., Aseltine *et al.*, 2000; Broidy, 2001; Capowich *et al.*, 2001). Second, while previous research provides only limited support for conditioning factors, internal factors like individual traits (e.g., self-esteem and self-efficacy) tend to receive even less support than external factors like an individual's relations with other people (e.g., delinquent peer relations).

We address the first issue by focusing on a conceptual distinction between inner- and outer-directedness of negative emotions and deviant coping, which Agnew (1992) proposes as a way to examine the relationship between the two concepts but which has rarely been empirically examined. To contribute to the second issue, we test the hypothesis of conditioning effects not only for the two most often studied internal factors, self-esteem and self-efficacy, but also a relatively neglected one in the literature on general strain theory, religiosity.

Several features distinguish the present study from previous research on strain theory. First, we analyze data from a national survey of African American adults, a population that tends to be overlooked by strain-theory researchers. This oversight is indeed unfortunate since compared with other racial and ethnic groups, African Americans tend to report or be associated with higher levels of strain, psychological distress, and deviance, especially violent crime. Second, the current research is distinctive in that we include

religiosity as a conditioning factor in our analyses. This inclusion of religiosity is based on the fact that survey research consistently shows African Americans report higher levels of religious involvement than other racial and ethnic groups, and that black churches continue to occupy a central and significant socialization role within African American communities (e.g., Anderson, 1999; Furstenberg, 2001).

## 2. GENERAL STRAIN THEORY

Agnew's general strain theory (GST) elaborates traditional strain models (Cloward and Ohlin, 1960; Cohen, 1955; Merton, 1938) by (1) redefining the strain concept, (2) specifying strain-generated negative emotions as the source of deviant motivation, and (3) incorporating conditioning factors into the theory to explain individual differences in adaptations to strain.<sup>5</sup>

### 2.1. Strain, Negative Emotions, and Deviant Coping

Agnew (1992) defines strain as "negative or aversive relations with others" (p. 61), which has three types:<sup>6</sup> "strain as the actual or anticipated failure to achieve positively valued goals, strain as the actual or anticipated removal of positively valued stimuli, and strain as the actual or anticipated presentation of negative stimuli" (p. 59). GST posits that strain generates negative emotions that provide motivation for deviance as a coping strategy because such emotional forces create pressure for corrective action. Thus, because strain's unmitigated effects are open to alternative theoretical explanations (Agnew, 1995c), the empirical validity of GST depends on the

<sup>5</sup>While Agnew (1999) recently applied his GST to the aggregate-level explanation of crime, in this paper we focus on his original theory written at the social psychological level (Agnew, 1992, 1995a, 1995b, 1995c).

<sup>6</sup>Despite Agnew's explicitly stated definition, detailed conceptualization, and suggested operationalization of strain, it is not altogether clear if by strain he refers to negative relations themselves or their outcome. In his initial and subsequent presentations of GST, Agnew (1992, 1995b, 1995c, 1999) uses the term "sources" of strain interchangeably with "types" of strain even though he says that he focuses on "types of strain rather than sources of strain" (Agnew, 1992, footnote 1; see also Agnew *et al.*, 1996). For example, if the presentation of negative stimuli is a *type* of strain, then strain refers to negative relations; but, if it is a *source* of strain, then strain refers to an outcome of negative relations. It cannot be both type *and* source of strain at the same time. In addition, the term "stress" has been used to refer to strain (e.g., Agnew, 1998, 1999). This is confusing because stress is a "state of arousal *resulting from* . . . [e]xternal circumstances . . . labeled stressors; [and] stress refers to internal arousal. Thus, stress is not an inherent attribute of external conditions" (Aneshensel, 1992, p. 16, *emphasis added*). According to this conceptual distinction, the synonym of strain in GST should be stressors rather than stress. Other researchers have also used this internally inconsistent terminology (e.g., Brezina, 1996; Brody, 2001; Hoffmann and Cerbone, 1999; Mazerolle and Piquero, 1998; Paternoster and Mazerolle, 1994). We propose here that the three categories of negative relations be referred to as three types (rather than sources) of strain and that strain be equated with stressors, not stress, for conceptual as well as semantic clarity and consistency.

extent to which negative emotions mediate the effects of strain on deviance and crime.

For Agnew (1992, p. 59), anger is the “most critical emotional reaction” to strain, but “strain increases the likelihood that individuals will experience one or more of a range of negative emotions.” The range of negative emotions includes self- or inner-directed (e.g., depression or anxiety) as well as other- or outer-directed emotions (e.g., anger). Agnew (1992, p. 60; see also footnotes 9 and 10) makes the conceptual distinction of inner- and outer-directedness not only for emotional reactions to strain but also for deviance committed to cope with negative emotions, inner- (e.g., drug use) and outer-directed deviant coping (e.g., aggression).

Agnew hypothesizes that outer-directed emotions are more likely to result in outer- than inner-directed deviance, though outer-directed emotions are not a necessary condition for outer-directed deviance. For example, individuals who blame their adversity on others are more likely to experience anger than depression in reaction to strain and thus engage in other-directed aggression rather than self-directed drug use, though they may still take drugs to alleviate their anger. Similarly, depressed individuals are more likely to turn to self-directed deviance like drug use because they are more likely to blame themselves than others, though they may still fight and argue with other people as a result of depressive feelings. Given that the same-directed relationships are more likely than the opposite-directed ones, the same-directed effects of negative emotions on deviant coping (e.g., the effects of anger on aggression) are expected to be larger than the opposite-directed counterparts (e.g., the effects of anger on drug use).

## **2.2. Conditioning Factors**

To explain why not all strained individuals turn to deviance and crime to adapt to strain, Agnew (1992) proposes that an individual’s internal and external factors condition the effects of strain on negative emotions, which in turn affects deviant coping. That is, the conditioning factors influence an individual’s selection of deviant vs. nondeviant coping by decreasing or increasing the likelihood that the individual will experience negative emotions in response to strain. However, the conditioning factors will not always work (Agnew and White, 1992). For example, an adolescent high in self-efficacy may still react to strain with anger. If self-efficacy fails to condition the effects of strain on anger and thus anger is produced by strain, self-efficacy is likely to condition the effects of anger on deviant coping. Thus an angry adolescent high in self-efficacy is less likely to turn to delinquency than an equally angry adolescent low in self-efficacy. When strain results in inner-directed negative emotions, the same conditioning effects are expected. In sum, we should examine two kinds of conditioning

effects by testing whether the effects of negative emotions on deviance as well as the effects of strain on negative emotions are moderated by a conditioning factor.

We focus on three conditioning factors: two internal factors that previous studies have most often examined, self-esteem and self-efficacy; and religiosity, to which Agnew pays little attention in his theory and thus previous researchers have rarely studied (but see Piquero and Sealock, 2000). In criminology, the effects of religiosity on crime and deviance have been theorized primarily in terms of social control and social learning (e.g., Jang and Johnson, 2001; Johnson *et al.*, 2000), whereas strain researchers tend to ignore the potential significance of religiosity in their models, or, at best they include it as a control variable in their research (e.g., Agnew and White, 1992; Agnew, 1998; Broidy, 2001). On the other hand, researchers of medical psychology, social work, and gerontology have examined the role of an individual's religiosity as a coping mechanism for strain and stress (e.g., Connell and Gibson, 1997; Hettler and Cohen, 1998). Thus, in this study we examine with a special interest the conditioning as well as main effects of religiosity in relation to strain, negative emotions, and deviant coping.

### **2.3. African Americans, GST, and Religiosity**

While GST is proposed as a general theory for all racial and ethnic groups, it may be especially applicable to African Americans who tend to report higher levels of psychological distress due to their more frequent experiences of racism and economic disadvantage (Hagan and Peterson, 1995; Mirowsky and Ross, 1989; Ross and Van Willingen, 1996; Schulz *et al.*, 2000). Further, according to GST, the disproportionately high levels of violence among African Americans should be attributable not only to the factors of control and social learning but also the relatively high levels of strain and resultant negative emotions (Agnew, 1999). The present study applies GST to African Americans to derive hypotheses unique to this ethnic group, which previous research on GST generally neglects.

GST posits that strained individuals are more likely to experience outer- than inner-directed emotions when they externalize strain by blaming others, whether people or the system, for their adversity rather than internalize it by blaming themselves. Larger effects of strain externalization on outer- than inner-directed emotions are expected given that other-blaming "increases the individual's level of felt injury, creates a desire for retaliation/ revenge, energizes the individual for action, and lowers inhibitions, in part because individuals believe that others will feel their aggression is justified" (Agnew, 1992, p. 60). According to previous research, African Americans are more likely than other racial groups to externalize their adversity because of

their relatively well-developed racial consciousness<sup>7</sup> based on the history of involuntary immigration and slavery as well as racial prejudice and discrimination (Hagan and Peterson, 1995; Neighbors *et al.*, 1996; Ogbu, 1990). Thus African Americans are more likely to experience outer- than inner-directed emotions in reaction to strain, and thus overall negative emotions (which tends to be outer- rather than inner-directed) are more likely to result in outer- than inner-directed deviant coping among African Americans.

Our focus on religiosity as a conditioning factor is also of special importance for African Americans given this ethnic group's higher levels of religious involvement and the symbolic centrality that religious institutions, especially black churches, occupy within African American communities (Ellison, 1993; Sherkat and Ellison, 1999). Previous research shows that African Americans not only report higher levels of religiosity than whites in the form of service attendance, membership in religious organizations, prayer, and Bible study, but they are also more likely to employ religious coping strategies than whites, reporting considerable satisfaction with the outcomes of religious coping efforts (Connell and Gibson, 1997; Ellison, 1993). These findings imply that our hypothesized buffering effect of religiosity is especially relevant to African Americans.

### 3. PRIOR RESEARCH

In critically evaluating previous research, we focus on two methodological issues, cross-sectional vs. longitudinal analysis and probability vs. nonprobability samples.<sup>8</sup>

<sup>7</sup>Gurin and Hatchett (1982, cited in Neighbors *et al.*, 1996, p. 171) define racial consciousness as "a set of beliefs about the relative position of African Americans in society. Specifically, consciousness is a collective interpretation of personal experience that includes power grievances about a group's relative disadvantaged status, which influences blacks to keep stress external rather than allowing it to become internalized."

<sup>8</sup>While longitudinal data, especially panel data are generally considered superior to cross-sectional data in testing a causal theory like GST, Agnew (1992, p. 65) posits that the effects of strain on negative emotions and deviant coping are contemporaneous in nature, taking place within a relatively short period of time like "three months" (see also Agnew, 1989, 1991). It has also been suggested that the commonly used one-year interval is too long to provide a fair test of GST (Brezina, 1996). Consequently, it would seem prudent to examine causal relationships among the three key variables of GST by estimating contemporaneous rather than long-interval-lagged effects when panel data are analyzed (Agnew and White, 1992). We join with Broidy (2001, p. 31), therefore, in proposing that analysis of cross-sectional data collected with a "diary type of approach . . . in which respondents are asked to record stressful events and their emotional and behavioral responses to these events might provide a better test of general strain theory" than that of "longitudinal data with a significant lag between waves," while panel data with short intervals are still preferred.

A fair evaluation of previous studies on GST also requires our close attention to the issue of whether researchers analyzed data collected from a probability sample, representative of an underlying population, providing researchers a theoretical basis for conducting statistical tests. While we do not deny the utility and potential contribution of research analyzing data collected from nonprobability samples, analyzing such data results in uncertainty about the statistical significance of estimated coefficients. Thus, in this review we give more weight to previous findings based on probability samples than those based on nonprobability samples.

The hypothesized effects of strain on negative emotions generally receive empirical support from both cross-sectional and longitudinal analysis, while studies based on probability samples (e.g., Agnew, 1985; Aseltine *et al.*, 2000; Brezina, 1996, 1998) tend to provide more consistent support than those based on nonprobability samples (e.g., Broidy, 2001; Mazerolle and Piquero, 1998). Of special relevance to our conceptual distinction between inner- and outer-directed emotions is Brezina's (1996) and Aseltine *et al.*'s (2000) findings that strain has positive effects on both types of negative emotions, as GST would predict.

Similarly, the significant effects of strain on deviance and crime are more likely to be observed when researchers analyze cross-sectional than longitudinal data with a long interval between waves (Agnew, 1989; Agnew and White, 1992; Paternoster and Mazerolle, 1994). However, empirical evidence of special interest to GST is not so much whether strain has positive direct effects on deviant coping but whether the direct effects are fully mediated by negative emotions (Agnew 1995c). There is some evidence of complete mediation coming from longitudinal (Brezina, 1998; Aseltine *et al.*, 2000) and cross-sectional studies (Capowich *et al.*, 2001) based on representative data,<sup>9</sup> while findings of partial mediation are also reported (Agnew, 1985; Aseltine *et al.*, 2000; Capowich *et al.*, 2001; Mazerolle and Piquero, 1998; Mazerolle *et al.*, 2000; Piquero and Sealock, 2000).

Although anger is found to have positive effects on different types of crime and deviance (Agnew, 1985; Brezina, 1998), previous studies tend to report that anger is more likely to have significant effects on outer- (interpersonal aggression and violent behavior) rather than inner-directed deviance (drug use), regardless of the type of anger measure and data analyzed (Aseltine *et al.*, 2000; Broidy, 2001; Capowich *et al.*, 2001; Mazerolle and Piquero, 1998; Piquero and Sealock, 2000; but see Mazerolle *et al.*, 2000). This pattern is generally consistent with what Agnew (1992) predicts, but the overall finding of nonsignificant effects of anger on inner-directed deviance is not, given that deviant coping other than aggression may occur as individuals try to manage their anger through illicit drug use (Agnew, 1992).

The hypothesized effects of inner-directed emotions on deviance, whether inner- or outer-directed, tend to receive less empirical support than

<sup>9</sup>We tested statistical significance (Paternoster *et al.*, 1998) of the difference between the effects of strain on deviant coping before and after controlling for negative emotions, observed by Capowich *et al.* (2001) who make a complete report of standard errors of regression coefficients. We find that all the observed differences are not significant at the level of 0.05 (one-tailed test). We could not conduct the same test for Brezina (1998) and Aseltine *et al.* (2000) because they do not report complete information about standard errors. Capowich *et al.*'s data are classified here as representative of the study population of "undergraduates ... registered for classes at a large western university during the Spring, 1997 semester" given their description of sampling procedure employed to collect the data.

those of outer-directed emotions (e.g., Aseltine *et al.*, 2000; Piquero and Sealock, 2000). When significant effects of inner-directed emotions on deviant coping are observed, they are either exceptions (e.g., Capowich *et al.*, 2001) or opposite to what are expected (e.g., Broidy, 2001).

Previous studies report mixed results on the effects of conditioning factors on the causal relationships among strain, negative emotions, and deviant coping, while inconsistent findings tend to be observed more often for internal (e.g., self-esteem and self-efficacy) rather than external factors (e.g., delinquent peer association). Given that Agnew's (1992) point on the need to focus on contemporaneous effects in testing GST is especially true for the proposed conditioning effects, we focus here on findings based on such effects.<sup>10</sup>

Agnew and White (1992) find the significant strain-aggravating effects of delinquent friends on delinquency and drug use, and the significant strain-ameliorating effects of self-efficacy on delinquency, but not on drug use. Similarly, Mazerolle *et al.* (2000) report that deviant peer affiliations positively interact with the effects of strain on violent delinquency and drug use, whereas a composite measure of Hirschi's (1969) social bonds, which includes an internal factor of belief as well as external factors of attachment and commitment, negatively interacts with drug use, but not with violent delinquency (see also Mazerolle and Maahs, 2000). In addition, Aseltine *et al.* (2000) find that a half of significant concurrent interaction effects involving self-esteem are opposite to what was predicted. Finally, Piquero and Sealock (2000) report that spiritual as well as emotional coping skills significantly buffer the effects of depression on property offending, though they do not weaken the impact of anger on property offending and that of depression or anger on interpersonal aggression.

In sum, the above review of previous studies on GST reveals two research questions that warrant further investigation. First, while some researchers have examined relationships between different types of negative emotions and deviant coping, few have investigated them systematically in terms of Agnew's (1992) conceptual distinction between inner- and outer-directedness. Second, it is important not only to further examine conditioning factors that Agnew has proposed, especially internal ones that tend to receive limited support, but also to search for new ones that would interact with strain and negative emotions given the central position that conditioning factors occupy within the GST framework.

<sup>10</sup>Studies analyzing panel data with one-year or longer interval between waves tend to find nonsignificant or unexpected interaction effects (Agnew and White, 1992; Aseltine *et al.*, 2000; Paternoster and Mazerolle, 1994; but see Mazerolle and Maahs, 2000).



#### 4. HYPOTHESES

To address these issues, we examine the relationships among strain, negative emotions, and deviant coping by testing the following hypotheses, derived from GST.

**Hypothesis 1.** Strain has positive effects on negative emotions, which in turn have positive effects on deviance.

**Hypothesis 2.** Negative emotions have positive effects on deviance with the same-directed effects being larger than their opposite-directed counterparts.

**Hypothesis 3.** Self-esteem, self-efficacy, and religiosity weaken or buffer the positive effects of strain on negative emotions and those of negative emotions on deviance.

**Hypothesis 4.** Among African Americans strain has larger positive effects on outer- than inner-directed emotions, and thus overall negative emotions in reaction to strain have larger positive effects on outer- than inner-directed deviance.

#### 5. METHODS

##### 5.1. Data

The data to test our hypotheses come from the National Survey of Black Americans (NSBA), precisely, the NSBA Cross-Section Study, which was the first of the six national studies conducted by the Program for Research on Black Americans (Jackson, 1991). The NSBA Cross-Section Study, a nationally representative survey of the adult African Americans, was completed in 1980 for a sample of 2,107 respondents. This multistage, probability sample was based on the national distribution of African Americans indicated in the 1970 Census. The sample was self-weighting, and every African American household in the continental United States had the same probability of being selected. Among eligible respondents (18 years of age or older, self-identified black, and U.S. citizens) of each selected household, one person was randomly chosen for face-to-face interview, using the Kish selection procedure. To complete the interviews, an average of 3.4 call-backs were made with a range of 1 to 22 per household, generating the overall response rate of 67%. This rate reflects that the black population is disproportionately distributed within urban areas, where typically response rates have been low.

While this national sample is fairly representative of the black population as reported by the 1980 Census (Jackson, 1991), according to this census showing 53% females in the total black resident population (U.S. Department of Commerce, 1981), it overrepresents women, who constitute

62% ( $n = 1,310$ ) of the total respondents. However, Jackson (1991, p. 25), a principal investigator of the survey, reports, "Analyses reveal no sex differences between respondents and identified nonrespondents," attributing the sex differences to "the disproportionate representation of black female-headed households in the United States." Given that the census definition of resident population includes incarcerated population, we believe that disproportionately high incarceration rates among African American men (Walker *et al.*, 1999) also partly contributed to this gender disparity in the sample.

The present data were collected from an adult sample of African Americans, while previous researchers have examined data from adolescent or college student samples of exclusively or predominantly white respondents. Although we cannot directly address the relative applicability of GST between white and African Americans with the present data, we can test whether GST applies to African Americans as well as whites, thereby examining the generality of GST in terms of race and ethnicity. This is another potential contribution of the present study given that a relatively small number of studies have tested strain theory (though not necessarily GST) for African Americans, and with inconsistent results (e.g., Lauritsen, 1994; Cernkovich and Giordano, 2000).

## 5.2. Measurement

In the NSBA each respondent was asked about "personal problem(s)" that came up not only in a respondent's life but also his or her significant others' lives. More than half of the total sample (61%,  $n = 1,281$ ) answered the question affirmatively, whereas about one third (36%,  $n = 763$ ) reported that no such personal problem as described in the survey had occurred to them or their significant others.<sup>11</sup> Those who reported they had personal problems were asked what the problem was about. Specifically, the survey includes a list of 120 different categories of life events: financial (6), residential (6), job-related (15), school-related (8), legal (8), interpersonal (32), death-related (13), criminal victimization (3), physical health (12), accident-related (4), mental health/psychological/spiritual (10), substance abuse (1), criminal offending (1), and "other" (1) problems. The last four categories are excluded from our analysis because the category of "mental health/psychological/spiritual problems" is likely to confound with the variable of negative emotions given their conceptual overlap, whereas "substance abuse" and "criminal offending" are themselves deviance (which is our dependent variable) and the nature of "other" problems is unclear to us. The remaining 107 categories of personal problems cover Agnew's three

<sup>11</sup>About 3% of the total sample ( $n = 63$ ) is treated as missing data (e.g., "don't know").

ideal types of strain (see Appendix I). The index of personal problems, which we call *strain*, has the value of 1 or 2 because each respondent mentioned up to two problems.<sup>12</sup> A total of 1,115 respondents provided data on the relevant categories of personal problems and are included in the subsequent analysis.

Respondents who mentioned personal problem(s) were asked a set of follow-up questions about “how they felt” during the time that they were having trouble with the problem(s) and how often they felt that way. Specifically, they were asked about nine items of emotional reactions to personal problem(s), including feeling “lonely,” being “depressed,” and losing one’s “temper.” All items except losing one’s “temper” are combined to construct the measure of *inner-directed emotions*. All factor loadings (from 0.51 to 0.76) and the inter-item reliability ( $\alpha = 0.84$ ) of these eight items are high. On the other hand, the “temper” item is used as the measure of *outer-directed emotions*. These two are combined for an omnibus measure, called *negative affect*.

Those respondents who reported personal problem(s) were also asked “how they acted” during the time of trouble and how often they acted that way (see Appendix I). Like the items of negative emotions, deviance items were asked only once about the time of personal problem(s), regardless of whether respondents mentioned one or two personal problems. We focus on two deviant behavioral reactions to the personal problem, *drug use* (“drank alcohol or got high in other ways”) and *fight/argue* (“fought and argued with other people”), which we use as the measure of inner-directed and outer-directed deviance, respectively. These two are combined to construct a composite measure called *general deviance*.

The NSBA data include six items of Rosenberg’s (1965) global self-esteem and four items of self-efficacy or sense of control, which is a person’s learned expectation that events and circumstances in one’s life are contingent on personal choices and actions. Given that the items’ factor loadings and the reliability coefficient of each set of items are generally acceptable (see Appendix I), the indexes of *self-esteem* and *self-efficacy* are constructed by calculating the mean of each concept’s multiple items. We built our measure of religiosity upon Levine *et al.*’s (1995) methodological work on the multidimensionality of religious involvement for African Americans based on the present data. To enhance content validity, we included all the twelve items that Levin *et al.* propose as good indicators of religiosity’s three dimensions—organizational, nonorganizational, and subjective religiosity—into our scale construction.<sup>13</sup>

<sup>12</sup>In our description of measurement, the names of variables are all italicized.

<sup>13</sup>The organizational dimension taps public, institutional forms of religious involvement (e.g., religious attendance), whereas the nonorganizational counterpart private, informal types of involvement (e.g., reading religious materials, prayer). Nonorganizational and subjective dimensions are different in that they refer to private religious practices and religious beliefs or affects (e.g., perceived importance of religion in socialization), respectively, while both have to do with the private aspect of religious involvement.

Inter-item reliability ( $\alpha = 0.85$ ) and factor loadings are all high with one exception (see Appendix I).<sup>14</sup> We summed standardized scores of all the twelve items to construct an index of *religiosity*.

Finally, we include sociodemographic variables in the present analysis to control for the sources of spurious relationships (Agnew, 1997; Broidy and Agnew, 1997; Mirowsky and Ross, 1989): *age*, gender (0 = female; 1 = *male*), *education* (as a social class measure), and marital status (0 = not or never married; 1 = *married*). For example, married people tend to be less distressed (especially when they are in an equitable relationship with their spouses) and less likely than their unmarried counterparts to turn to deviance in reaction to strain due to their relations with family members and greater stake in conformity. The variables of urbanicity (0 = rural; 1 = *urban*) and region (0 = the non-South; 1 = the *South*) are controlled for because (1) living in urban areas might increase the risk of engaging in deviant behavior and psychological distress due to alienation and the concentration of poverty and (2) the relationship between “religious benefits” and religious participation is weaker in the South, especially the rural South than the non-South among African Americans (Agnew, 1997, 1999; Ellison, 1993; Hagan and Peterson, 1995; Sherkat and Ellison, 1999). In addition, consistent with GST and previous research, we include two variables from control and social learning theories: a respondent’s *family attachment* and having *close friends* to talk with about personal problems, which are expected to be correlated with our both independent and dependent variables (e.g., Agnew, 1992; Agnew and White, 1992; Paternoster and Mazerolle, 1994).

### 5.3. Research Caveat

First, the present analysis is potentially limited in that we analyze cross-sectional data to test causal hypotheses (i.e., strain results in negative emotions which in turn lead to deviant coping). However, the way the key variables are measured in the present data are based on what Broidy (2001, p. 31) calls a “diary type of approach,” thereby allowing us to make a causal interpretation of estimated relationships among strain, negative emotions, and deviance. Specifically, respondents’ negative emotions and deviant coping are both measured as reactions to strain, and thus the latter precedes the former. The NSBA asked about deviant coping as a reaction to respondents’ personal problems, but not necessarily to their negative

<sup>14</sup>We decided not to drop the item with the lowest factor loading (“How important was religion in your home while you were growing up?”) from the construction of religiosity measure because its elimination made little difference in inter-item reliability ( $\alpha = 0.86$ ) and zero-order correlations between religiosity and other variables.

emotions. Based on GST we assume that deviant coping is more a direct response to negative emotions than the personal problems.

Second, the present measure of strain has limited variation: that is, respondents have the score of either one or two on the measures of strain. In addition, because the items of negative emotions and deviant coping were asked only for those who reported personal problem(s) the present data do not allow us to compare strained to nonstrained respondents and make it more difficult to find significant effects of strain on negative emotions and deviant coping. Put positively, however, the exclusion of those nonstrained respondents from the present analysis is required by our use of a “situational” measure of negative emotions, produced by strain that “function as a *situational event*” (Agnew, 1992, p. 60) and results in particular emotional and behavioral reactions.

## 6. RESULTS

We applied ordinary least squares (OLS) regression analysis to test our hypotheses, using the method of listwise deletion of missing cases. For statistical significance ( $\alpha = 0.05$ ), we conducted one-tailed test for the hypothesized relationships and two-tailed test for non-hypothesized ones, including any relationship whose direction is opposite to our expectation.

Table I shows means and standard deviations of all variables included in the present analysis and their bivariate correlations. First, the control variables (from age to close friends) tend to be significantly correlated with the GST variables (74%, 59 out of 80), both independent (73%, 41 out of 56) and dependent (75%, 18 out of 24), indicating the importance of including those variables in multivariate analysis to control for the sources of spuriousness. Second, 80% (36 out of 45) of all correlations among the theoretical variables (from self-esteem to fight/argue) are significant in the expected direction with one exception, the positive association between religiosity and inner-directed negative emotions (0.10). These results generally support our selection of control variables and construction of theoretical variables.

Table II summarizes results from estimating nine regression models for different dependent variables. The first three columns present estimated models for negative emotions, and the next six show those for deviant coping. Specifically, we estimate the model separately for the submeasures as well as composite measure of both negative emotions and deviant coping to examine whether the results change across the measure. Thus in each model we test the buffering effects (Hypothesis 3) not only for the composite measures but also those submeasures by including all relevant interaction terms simultaneously, instead of individually, to estimate a fully specified

**Table I.** Descriptive Statistics and Zero-order Correlations<sup>a</sup> of Independent and Dependent Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
(1) Age	1.00																		
(2) Male	-0.02	1.00																	
(3) Education	-0.50 <sup>+</sup>	0.00	1.00																
(4) Married	0.05 <sup>+</sup>	0.18 <sup>+</sup>	0.05 <sup>+</sup>	1.00															
(5) Urban	-0.10 <sup>+</sup>	-0.01	0.24*	-0.09 <sup>+</sup>	1.00														
(6) South	0.06 <sup>+</sup>	-0.00	-0.18 <sup>+</sup>	0.04	-0.41 <sup>+</sup>	1.00													
(7) Family attachment	0.07 <sup>+</sup>	0.02	0.03	0.06 <sup>+</sup>	-0.06 <sup>+</sup>	0.06 <sup>+</sup>	1.00												
(8) Close friends	0.01	0.02	-0.00	-0.04	-0.07 <sup>+</sup>	0.02	0.12*	1.00											
(9) Self-esteem	0.06 <sup>+</sup>	0.04 <sup>+</sup>	0.11*	0.06 <sup>+</sup>	-0.00	0.02	0.15*	0.04*	1.00										
(10) Self-efficacy	0.06 <sup>+</sup>	0.11 <sup>+</sup>	0.17*	0.06 <sup>+</sup>	0.11 <sup>+</sup>	-0.10 <sup>+</sup>	0.11*	0.03	0.28*	1.00									
(11) Religiosity	0.35*	-0.21*	-0.14*	0.11 <sup>+</sup>	-0.17 <sup>+</sup>	0.21*	0.19*	0.09*	0.19*	0.02	1.00								
(12) Strain	-0.03	-0.06 <sup>+</sup>	0.04	0.01	0.07*	-0.07 <sup>+</sup>	0.02	-0.04	-0.04	0.02	0.01	1.00							
(13) Negative affect	-0.13 <sup>+</sup>	-0.20 <sup>+</sup>	-0.00	-0.06 <sup>+</sup>	0.03	-0.06 <sup>+</sup>	-0.14*	-0.03	-0.11*	-0.17*	-0.08*	0.10*	1.00						
(14) Inner-directed emotions	0.06 <sup>+</sup>	-0.27 <sup>+</sup>	-0.16 <sup>+</sup>	-0.10 <sup>+</sup>	-0.06 <sup>+</sup>	0.05	-0.13*	-0.01	-0.13*	-0.22*	0.10 <sup>+</sup>	0.05*	0.70*	1.00					
(15) Outer-directed emotions	-0.20 <sup>+</sup>	-0.08 <sup>+</sup>	0.10 <sup>+</sup>	-0.02	0.07 <sup>+</sup>	-0.11 <sup>+</sup>	-0.10*	-0.03	-0.07*	-0.08*	-0.17*	0.10*	0.89*	0.30*	1.00				
(16) General deviance	-0.21 <sup>+</sup>	0.18*	0.10 <sup>+</sup>	-0.06*	0.09*	-0.14 <sup>+</sup>	-0.10*	0.02	-0.11*	-0.03	-0.26*	0.05*	0.41*	0.19*	0.43*	1.00			
(17) Drug use	-0.12 <sup>+</sup>	0.25*	0.02	-0.06*	0.07*	-0.09*	-0.10*	-0.01	-0.10*	-0.04	-0.27*	0.01	0.26*	0.16*	0.26*	0.82*	1.00		
(18) Fight/Argue	-0.21 <sup>+</sup>	0.03	0.15 <sup>+</sup>	-0.04	0.08*	-0.15 <sup>+</sup>	-0.06*	0.03	-0.07*	-0.00	-0.15*	0.08*	0.40*	0.14*	0.44*	0.78*	0.28*	1.00	
Mean	43.16	0.38	10.90	0.41	0.79	0.53	3.48	2.19	3.53	0.49	0.00	1.15	6.07	3.25	2.83	3.58	1.80	1.80	
Standard deviation	17.71	0.48	3.46	0.49	0.41	0.50	0.74	0.78	0.46	0.32	0.62	0.36	2.06	0.99	1.53	2.01	1.30	1.20	
Number of cases (N)	2098	2107	2087	2101	2107	2107	2087	2091	2102	2104	2107	1115	1306	1306	1298	1302	1297	1291	

<sup>a</sup>Correlations are calculated using the method of pairwise deletion of missing cases.

\* $p < 0.05$  (one-tailed test), <sup>+</sup> $p < 0.05$  (two-tailed test)

**Table II.** Estimated Regression Models of Strain, Negative Emotions, and Deviance: Unstandardized Coefficients and Standard Errors (in parentheses)

Independent variable	Negative affect	Inner emotions	Outer emotions	General deviance		Drug use		Fight/argue	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Age	-0.02* (0.01)	0.00 (0.00)	-0.01* (0.00)	-0.01* (0.00)	-0.01* (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.01* (0.00)	-0.00 (0.00)
Male	-0.78 <sup>+</sup> (0.13)	-0.41 <sup>+</sup> (0.06)	-0.06 (0.10)	1.03* (0.12)	1.01* (0.12)	0.72* (0.08)	0.75* (0.08)	0.17* (0.08)	0.12 (0.08)
Education	-0.04* (0.02)	-0.04* (0.01)	0.02 (0.02)	0.02 (0.02)	0.01 (0.02)	-0.02 (0.01)	-0.02 (0.01)	0.03 <sup>+</sup> (0.01)	0.02 <sup>+</sup> (0.01)
Married	-0.05 (0.12)	-0.10* (0.06)	0.08 (0.09)	-0.20* (0.11)	-0.23* (0.11)	-0.15* (0.07)	-0.15* (0.07)	-0.02 (0.07)	-0.04 (0.07)
Urban	-0.02 (0.17)	-0.00 (0.08)	-0.04 (0.12)	0.05 (0.15)	0.08 (0.15)	0.13 (0.10)	0.15 (0.10)	-0.07 (0.10)	-0.06 (0.09)
South	-0.20 (0.13)	0.07 (0.06)	-0.23 <sup>+</sup> (0.10)	-0.31 <sup>+</sup> (0.12)	-0.31 <sup>+</sup> (0.12)	-0.02 (0.08)	-0.03 (0.08)	-0.24 <sup>+</sup> (0.07)	-0.22 <sup>+</sup> (0.07)
Family attachment	-0.21* (0.08)	-0.08* (0.03)	-0.07 (0.06)	-0.05 (0.07)	-0.05 (0.07)	-0.04 (0.05)	-0.04 (0.05)	0.00 (0.04)	-0.00 (0.04)
Close friends	-0.06 (0.09)	0.02 (0.04)	-0.07 (0.06)	0.12 (0.08)	0.12 (0.08)	0.04 (0.05)	0.03 (0.05)	0.04 (0.05)	0.06 (0.05)
Self-esteem	-0.12 (0.13)	-0.13* (0.06)	0.06 (0.10)	-0.22* (0.12)	-0.20* (0.12)	-0.08 (0.08)	-0.05 (0.08)	-0.09 (0.08)	-0.10 (0.08)
Self-efficacy	-0.71* (0.20)	-0.34* (0.09)	-0.13 (0.15)	0.03 (0.18)	-0.03 (0.18)	-0.09 (0.12)	-0.11 (0.12)	0.11 (0.11)	0.08 (0.11)
Religiosity	-0.20* (0.11)	0.13 <sup>+</sup> (0.05)	-0.32* (0.08)	-0.35* (0.10)	-0.33* (0.10)	-0.31* (0.07)	-0.31* (0.07)	-0.00 (0.06)	0.02 (0.06)
Strain	0.48* (0.17)	0.05 (0.08)	0.30* <sup>a</sup> (0.12)	0.11 (0.15)	0.08 (0.15)	-0.05 (0.10)	-0.06 (0.10)	0.13 (0.09)	0.12 (0.09)
Negative Affect				0.41* (0.03)		0.13* <sup>a</sup> (0.02)		0.21* <sup>a</sup> (0.02)	
Inner-directed emotions			0.49* (0.05)		0.31* (0.06)		0.20* (0.04)		0.05* <sup>b</sup> (0.04)
Outer-directed emotions		0.19* (0.02)			0.46* (0.04)		0.10* (0.03)		0.28* <sup>b</sup> (0.02)
Fight/Argue						0.17* (0.03)	0.18* (0.03)		
Drug use								0.15* (0.03)	0.15* (0.03)
(Self-esteem × Strain)	0.47 (0.36)	-0.03 (0.16)	0.41 (0.26)	0.42 (0.32)	0.37 (0.32)	-0.21 (0.21)	-0.23 (0.22)	0.51 <sup>+</sup> (0.20)	0.48 <sup>+</sup> (0.20)
(Self-esteem × Negative affect)				-0.02 (0.06)		0.03 (0.04)		-0.05 (0.04)	
(Self-esteem × Inner-directed)					-0.19 (0.13)		-0.14* (0.09)		-0.03 (0.08)
(Self-esteem × Outer-directed)					0.06 (0.08)		0.13 <sup>+</sup> (0.06)		-0.06 (0.05)
(Self-efficacy × Strain)	-0.90* (0.54)	0.28 (0.24)	-1.03* (0.38)	0.19 (0.47)	0.28 (0.47)	0.16 (0.32)	0.17 (0.32)	-0.00 (0.30)	0.07 (0.29)
(Self-efficacy × Negative affect)				0.06 (0.09)		0.02 (0.06)		0.02 (0.06)	
(Self-efficacy × Inner-directed)					0.31 (0.19)		0.16 (0.13)		0.10 (0.12)
(Self-efficacy × Outer-directed)					-0.06 (0.12)		-0.06 (0.08)		-0.00 (0.08)
(Religiosity × Strain)	0.08 (0.28)	-0.06 (0.12)	0.14 (0.20)	-0.00 (0.24)	-0.02 (0.24)	0.18 (0.16)	0.19 (0.16)	-0.17 (0.15)	-0.19 (0.15)

Table II. continued

Independent variable	Negative affect	Inner emotions	Outer emotions	General deviance		Drug use		Fight/argue	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(Religiosity × Negative affect)				-0.12*		-0.06*		-0.03	
				(0.04)		(0.03)		(0.03)	
(Religiosity × Inner-directed)					-0.21*		-0.03		-0.13*
					(0.10)		(0.06)		(0.06)
(Religiosity × Outer directed)					-0.08		-0.09*		0.02
					(0.06)		(0.04)		(0.04)
Adjusted R <sup>2</sup>	0.09	0.21	0.16	0.28	0.28	0.21	0.21	0.22	0.24
N	1086	1081	1081	1083	1079	1071	1067	1071	1067

<sup>a</sup>These coefficients are compared with test Hypothesis 4.

<sup>b</sup>These coefficients are compared with test Hypothesis 2.

\* $p < 0.05$  (one-tailed test), <sup>†</sup> $p < 0.05$  (two-tailed test).

model, thereby conducting a conservative test of our hypothesis. In addition, models that include a submeasure of negative emotions and/or deviant coping are estimated controlling for its counterpart given the significant correlations between the two submeasures of negative emotions ( $r = 0.30$ ) and between those of deviant coping ( $r = 0.28$ ) (see Table I).

Age tends to have negative effects on outer-directed, emotional and behavioral, reactions to strain, which might indicate an individual's increasing maturity in emotionally and behaviorally responding to personal problems, as he or she grows older. As expected, males are more likely than females to commit deviance, both inner- and outer-directed, but less likely to react to strain with negative emotions, especially inner-directed ones.<sup>15</sup> An individual's levels of education and marital status (being married) have negative effects on inner-directed, emotional and behavioral (only for marital status), reactions to strain, whereas the urbanicity of place-of-residence has no effect on the dependent variable.<sup>16</sup> Southerners are less likely than non-Southerners to show outer-directed emotions and behaviors in reaction to strain, while they are not different in the likelihood of showing inner-directed reactions to strain.

<sup>15</sup>The negative effects of being male on inner-directed emotions (e.g., feeling lonely or having crying spells) might be due to male respondents' unwillingness to report those emotions that they might perceive to be non-masculine. However, sex differences in expressiveness or response bias are unlikely to explain away the observed effects of sex on emotional reactions to strain (Mirowsky and Ross, 1995).

<sup>16</sup>Education is found to have significant positive effects on deviance, specifically, fighting and arguing with other people (columns 8 and 9). We speculate that this unexpected effect might reflect education's positive effects on an individual's assertiveness rather than aggressiveness. On the other hand, the nonsignificant effects of urbanicity on deviance in the multivariate model tend to indicate that the variable indirectly influences negative emotions and deviance via other variables like family attachment and religiosity given its significant zero-order correlations with these potential mediators and the measures of deviant coping (see Table I).



People who live with family members close to one another (i.e., family attachment) are less likely to react to strain with negative emotions, especially inner-directed emotions, than those who do not, whereas having close friends to talk with about personal problems tends to make little difference in handling strain. As expected, individuals with high levels of self-esteem and self-efficacy are less likely than those with low levels to react to strain with negative emotions, especially inner-directed emotions and deviance (only for those with high self-esteem). Religiously committed people are less likely to lose their tempers and engage in deviant coping, especially drug use, but more likely to feel inner-directed negative emotions in reaction to personal problems compared with those who are not religious. The latter finding might be an outcome of the tendency among religious people to internalize personal problems by attributing them to personal weakness or sin rather than blaming others for their adversity.

Overall results from estimating nine regression models tend to show that our first hypothesis receives empirical support. That is, strain is found to have positive effects on negative emotions, which in turn have positive effects on deviant coping. For example, strain has the positive effect of 0.48 (column 1) on negative affect, and negative affect also has the positive effect of 0.41 (column 4) on general deviance. The direct effects of strain on general deviance, which were significant before negative affect is added to the model (0.30, not presented in Table II), become nonsignificant once the intervening variable of negative emotions is controlled for (0.11, column 4).<sup>17</sup> This finding is consistent with GST, showing that negative emotions completely mediate the effects of strain on deviant coping. The strain-emotion-deviance relationship remains consistently significant across models using different measures of negative emotions and deviant coping except two nonsignificant links: one is between strain and inner-directed emotions (0.05, column 2), the other is between inner-directed emotions and fight/argue (0.05, column 9).<sup>18</sup>

<sup>17</sup>Excluding all interaction terms, which are potential mediators, from the model, we observed a similar change in the effects of strain on deviance: that is, significant effects of strain on deviance (0.28) become nonsignificant (0.09) once negative affect is controlled for. This pattern is also true for other models that include submeasures of negative emotions and/or deviant coping.

<sup>18</sup>Although we treat drug use as an inner-directed deviant coping to be consistent with GST, stress researchers typically conceptualize depression as an inner-directed deviant outcome itself (e.g., Aneshensel *et al.*, 1991; Mirowsky and Ross, 1995). Thus, we estimated the effects of strain on depressed mood (Mirowsky and Ross, 1989), measured by three non-anxiety, non-malaise items of inner-directed negative emotions (i.e., items 1, 3, and 5; see Appendix I). We found that strain has no significant effect on our measure of depression (0.07) even after excluding outer-directed emotions and interaction terms from our analysis. It is speculated that we found no significant effect because our measure of depression is limited and/or fails to tap psychological *disorder* more than distress.

We also find empirical support for the second hypothesis. Specifically, eight out of nine coefficients associated with the effects of negative emotions on deviant coping are significant with the exception of the effects of inner-directed emotions on fight/argue (column 9). More importantly, while both inner- and outer-directed emotions have significant effects on both types of deviant coping, as hypothesized, the same-directed effects are larger than the opposite-directed effects (see the boxed pairs of coefficients in columns 7 and 9). Specifically, inner-directed emotions have larger effects on inner- (i.e., drug use, 0.20) than outer-directed deviance (i.e., fight/argue, 0.05), whereas outer-directed emotions have larger effects on outer- (0.28) than inner-directed deviance (0.10). Statistical tests (Paternoster *et al.*, 1998) confirm the significance of the observed differences in regression coefficients (i.e., 0.15,  $z = 2.68$ ; and 0.18,  $z = 4.98$ , respectively).

Next, the most support for the third hypothesis is observed in the interaction effects involving religiosity as a conditioning factor. The coefficients of self-esteem's four interaction terms are significant ( $-0.14$  and  $0.13$ , column 7;  $0.51$ , column 8; and  $0.48$ , column 9) but mostly in the opposite direction, that is, positive instead of negative (see Aseltine *et al.*, 2000 for similar findings), whereas those of self-efficacy's two interaction terms are significant ( $-0.90$ , column 1; and  $-1.03$ , column 3) in the hypothesized direction. On the other hand, while failing to buffer the direct effects of strain on either negative emotions or deviant coping, religiosity tends to weaken the effects of negative emotions on deviant coping ( $-0.12$ , column 4;  $-0.21$ , column 5;  $-0.06$ , column 6;  $-0.09$ , column 7; and  $-0.13$ , column 9). These buffering effects are not observed across all models of deviant coping (columns 4 through 9), but the inconsistent pattern may make sense for the following reason.

For example, the estimated models of general deviance show that religiosity is able to buffer the effects of negative emotions on deviant coping for inner-directed emotions ( $-0.12$ , column 4), but not for outer-directed ones ( $-0.21$  vs.  $-0.08$ , column 5). This finding, coupled with the differential direct effects of religiosity on inner- ( $0.13$ , column 2) and outer-directed emotions ( $-0.32$ , column 3), suggests that religiosity moderates the effects of negative emotions on general deviance differently for inner- and outer-directed emotions. Specifically, religiosity reduces the effects of negative emotions on deviance by moderating the effects of inner-directed emotions, on which it has positive effects ( $0.13$ ), whereas it does so indirectly for outer-directed emotions, through which it has negative effects on general deviance ( $-0.15 = -0.32 \times 0.46$ ).

We also have empirical support for the last hypothesis (Hypothesis 4). Specifically, we find that (1) strain has larger effects on outer- ( $0.30$ , column 3) than inner-directed emotions ( $0.05$ , column 2) and (2) negative affect has

larger effects on outer- (0.21, column 8) than inner-directed deviance (0.13, column 6). Not only do these coefficients look different, but also these observed differences are statistically significant (i.e., 0.25,  $z = 1.77$ ; and 0.08,  $z = 2.97$ , respectively).

Finally, the proportion of the dependent variable's explained variance ranges from 0.09 (negative affect) to 0.21 (inner-directed emotions) for negative affect and from 0.21 (drug use) to 0.28 (general deviance) for deviant coping. While these are smaller than some of the previous studies report (e.g., Agnew and White, 1992; Aseltine *et al.*, 2000), larger  $R^2$  tends to come from models that have more variables than ours. Our values of  $R^2$  are comparable to those reported by researchers whose models tend to be similar in the number and composition of variables (e.g., Brezina, 1996, 1998; Piquero and Sealock, 2000).

## 7. DISCUSSION AND CONCLUSION

We began this paper by identifying two sets of theoretical relationships proposed in GST, whose previous findings are either limited or not consistent enough to warrant further research: (1) the effects of negative emotions on deviant coping and (2) the effects of conditioning factors on the causal relationships among strain, negative emotions, and deviance. Based on our literature review, we proposed that (1) a conceptual distinction between inner- and outer-directed emotions and deviant coping should apply to an empirical test of GST and (2) religiosity, to which prior research on GST has paid only limited attention, as well as self-esteem and self-efficacy be examined as conditioning factors that might affect the selection of coping strategies. We now go back to these issues to discuss the implications of our findings.

First, we examined the effects of inner- and outer-directed negative emotions on deviant coping separately for inner- and outer-directed deviance, finding that the same-directed effects of negative emotions on deviant coping are significantly larger than the opposite-directed effects. This is consistent with Agnew's (1992) expectation that those who experience negative emotions toward others are likely to engage in other-directed coping behavior like aggression, whereas those who experience negative emotions toward themselves are likely to engage in self-directed coping behavior like drug use. Thus our study suggests that the dimension of directedness be incorporated into the conceptualization of negative emotions and deviant coping in GST. In addition, both the significant effects of strain on inner- as well as outer-directed emotions and those of inner-directed emotions on deviance, especially drug use, indicate that negative emotions other than anger should not be neglected in future tests of GST.

Second, we find that individuals who are religiously committed are less likely than those who are not to engage in deviant coping in reaction to personal problems because their religiosity buffers the effects of negative emotions on deviance as well as directly and indirectly (via outer-directed emotions) affects their coping strategies. However, religiosity's conditioning of the effects of strain on either negative emotions or deviant coping is found to be nonsignificant across models. Although this might have been due to the limited measure of strain the present study employed, it is unlikely to be a complete explanation of the null finding given the significant effects that strain has on negative emotions and deviant coping.

Thus, to the extent to which the nonsignificant buffering effect is not a methodological artifact, the overall findings document how religiosity works as a conditioning factor. That is, while religiosity directly affects an individual's emotional reactions to strain (i.e., less likely to lose temper but more likely to feel depressed and anxious), it does not protect the individual from strain by weakening its impact on emotional reactions. However, religiosity significantly ameliorates, though does not eliminate, the deviance-generating effects of negative emotions in reaction to strain. The present finding of significant buffering effects is consistent with what previous studies report about the role of religiosity as a protective factor (Hettler and Cohen, 1998; Jang and Johnson, 2001; Johnson *et al.*, 2000; Piquero and Sealock, 2000).

On the other hand, we find limited support for self-esteem and self-efficacy as conditioning factors like previous studies (e.g., Aseltine *et al.*, 2000; Paternoster and Mazerolle, 1994; but see Agnew and White, 1992). However, this generally negative evidence should not be hastily interpreted as an empirical basis to exclude self-esteem and self-efficacy from future research given the substantive ground upon which Agnew (1992) proposes them as conditioning factors. Instead, future research might need to reconceptualize these conditioning factors. For example, all the studies examining self-esteem, including this one, employ a measure of *global* self-esteem, which previous studies tend to find is poorly associated with deviant behavior (Jang and Thornberry, 1998; Rosenberg *et al.*, 1995). Thus, future research that focuses on *specific* self-esteem or *content-specific* self-concept might find supportive evidence for the concept of self as a conditioning factor.

We believe that this study contributes to the GST literature by using data collected from a nationally representative sample of African American adults, unlike previous studies that mostly employ exclusively or predominantly white adolescent or college-student samples, often nonprobability samples. Specifically, analyzing data collected from a probability sample of an understudied population, we provide evidence of race/ethnicity- as well as age-generalizability of GST. In addition, the present finding

that Agnew's (1992, p. 59) emphasis on anger as "the most critical emotional reaction to strain" is especially relevant to African Americans, is an indication of the significance of further research and theoretical development of GST with respect to race and ethnicity. For example, the effects of strain on inner-directed emotions might be larger for whites than African Americans given that the former are more likely to internalize strain than the latter (Neighbors *et al.*, 1996).

Although our study is based on cross-sectional data, our data on the key variables of GST were collected in such a way that respondents first report their personal problems and then emotional and behavioral reactions to the reported strain. We believe that our use of cross-sectional data provides a better test of GST than previous studies' longitudinal data with long intervals between waves (Broidy, 2001). However, future research needs to be conducted based on prospective longitudinal data with a relatively short lag between waves, even though we recognize such data are not often available for criminological research. Even better would be data collected using direct observation, though such unobtrusive observation is not always possible or inexpensive.

We acknowledge several limitations of our study. First, the content validity of our strain measure is limited in that it is confined to the magnitude dimension (i.e., number), which previous studies tend to examine, because we could not tap the other dimensions like duration due to data constraints.<sup>19</sup> Although Agnew (1992, p. 64) argues that strain is "more influential to the extent that they are (1) greater in magnitude or size, (2) recent, (3) of long duration, and (4) clustered in time," we propose that the theoretical relevancy of each dimension to GST should be further discussed before they are put to an empirical test. For example, while it is plausible to hypothesize the positive effects of duration on negative emotions, it is also possible that duration might have the opposite effects or "dulling effects" as strained individuals adjust or simply get used to strain of long duration. Finding significantly lower, not higher, levels of psychological distress among African Americans than whites living in high poverty areas, a recent study attributes the unexpected race differences partly to African Americans' longer exposure to impoverished living conditions,

<sup>19</sup>The NSBA includes an item asking respondents how recent their personal problems were, which we used as a measure of the "recency" dimension of strain. The variable, however, was found to have either nonsignificant or negative (instead of positive as Agnew would have predicted) effects on negative emotions and deviance. Although this seems a counter-evidence of GST at first glance, it is not necessarily so given that all the questions about negative emotions and deviance as reaction to strain were asked in relation to strain, whether it occurred recently or not. In other words, the "recency" variable should not be related to the variables of negative emotions and deviance at the time of strain but rather those variables at the time of survey, which is not available in the NSBA data.

which might have them develop more effective coping recourses like social support networks and community engagement (Schulz *et al.*, 2000).

Second, while gender was included in our multivariate analysis as one of the controls, in this study we did not focus on gender differences in strain, negative emotions, and deviant coping (Broidy and Agnew, 1997). For example, while females are as likely or more likely to be strained than males, males might be more likely to take aggressive or confrontational action to correct for strain because they are more likely to have severe interpersonal conflicts, outer-directed negative emotions, and more deviant opportunities than females who are more likely to turn to self-destructive deviance (e.g., drug use). Future research should examine this issue. Finally, given the age of the data we analyzed the generalizability of our findings to the current black population might be potentially limited and thus needs to be further examined.

Despite these limitations, our findings generally confirm that Agnew's GST has taken the right step by including the key intervening variable of negative emotions between strain and deviance as a coping mechanism. To further improve the theory and future research on GST, however, our findings suggest that the conceptual distinction between inner- and outer-directed negative emotions and deviant coping should be given more weight than it is by the current form of GST and its existing research. The present study also indicates that a search for "new" conditioning factors, like religiosity, as well as conceptual and methodological elaboration of those factors proposed in GST will be beneficial to the continued development of the theory.

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APPENDIX I. Items Used for Analysis

Concept/ variable	Description of item (Response category)	Factor loading	$\alpha$
STRAIN	<p>“Thinking about the last time you [had a personal problem you couldn’t handle by yourself], what was this problem about?”</p> <p>(1) poor or declining financial status, loss of assets, theft or destruction of property (except housing), problem with car or other material goods, etc.</p> <p>(2) moved to or lives in poor (worse) house/apartment or neighborhood, dislocation or relocation, theft or destruction to house/apartment, etc.</p> <p>(3) problems finding a job, quit job, laid off, unemployed or lost job, retired, business problems, negative events at work, job demotion, trouble with boss/supervisor/co-workers, work-related tension, poor work conditions, etc.</p> <p>(4) negative events related to school, admission problems/failure, school-related pressures, bad things happened at school, etc.</p> <p>(5) legal, involved in court action/lawsuit/legal action, arrested/convicted of crime/violation of law, legal aspects of divorce, custody of children, etc.</p> <p>(6) trouble with family/spouse/child(ren)/parent(s)/in-law(s)/relative(s)/friend(s), (unwanted) pregnancy, physical separation from spouse/child(ren), marital separation, divorce, break-up with friend of same/opposite sex, birth of (unwanted) child(ren), parent(s)/parent-in-law(s) moved in, etc.</p> <p>(7) death of someone close, death of pet, etc.</p> <p>(8) violence/crime victimization</p> <p>(9) poor health or sickness, acute physical illness, chronic condition or disability, other health-related problems, etc.</p> <p>(10) accident or injury</p>		
NEGATIVE EMOTIONS	<p>“During [the] time [you were having trouble with that problem], how often ...” (1 = never; 2 = hardly ever; 3 = not too often; 4 = fairly often; 5 = very often)*</p>		
Inner-directed	<p>(1) did you feel lonely?</p> <p>(2) did you feel that you just couldn’t get going?</p> <p>(3) were you depressed?</p> <p>(4) were you jumpy or jittery?</p> <p>(5) did you cry easily or have crying spells?</p> <p>(6) did you feel like not eating or have a poor appetite?</p> <p>(7) did you have restless sleep or trouble getting to sleep?</p> <p>(8) did you actually feel physically sick?</p>	<p>0.61</p> <p>0.70</p> <p>0.76</p> <p>0.61</p> <p>0.55</p> <p>0.63</p> <p>0.66</p> <p>0.51</p>	0.84
Outer-directed	<p>did you lose your temper?</p>		

## APPENDIX I. continued

Concept/ variable	Description of item (Response category)	Factor loading	$\alpha$
DEVIANT COPING	“During [the] time [you were having trouble with that problem], how often ...” (1 = never; 2 = hardly ever; 3 = not too often; 4 = fairly often; 5 = very often)*		
Drug use	did you drink alcohol or get high in other ways?		
Fight/Argue	did you fight and argue with other people?		
RELIGIOSITY			
Organizational	(1) “How often do you usually attend religious services?” (1 = less than once a year; 2 = a few times a year; 3 = a few times a month; 4 = at least once a week; 5 = nearly everyday)*	0.75	0.85
	(2) “Are you an official member of a church or other place of worship?” (0 = no; 1 = yes)*	0.81	
	(3) “Besides regular service, how often do you take part in other activities at your place of worship?” (1 = never; 2 = a few times a year; 3 = a few times a month; 4 = at least once a year; 5 = nearly everyday)*	0.90	
	(4) “How many church clubs or organizations do you belong to or participate in?” (actual number is coded)	0.61	
	(5) “Do you hold any positions or offices in your church or place of worship?” (0 = no; 1 = yes)*	0.54	
Nonorganizational	“How often do you ...?” (1 = never; 2 = a few times a year; 3 = a few times a month; 4 = at least once a year; 5 = nearly everyday)*		
	(1) read religious books or other religious materials	0.53	
	(2) watch or listen to religious programs on TV or radio	0.38	
	(3) pray	0.47	
	(4) ask someone to pray for you	0.44	
Subjective	“How important ...?” (1 = not important at all; 2 = not too important; 3 = fairly important; 4 = very important)		
	(1) was religion in your home while you were growing up	0.24	
	(2) is it for Black parents to send or take their children to religious services	0.38	
	(3) “How religious would you say you are?” (1 = not religious at all; 2 = not too religious; 3 = fairly religious; 4 = very religious)	0.53	
SELF-ESTEEM	“After each statement I read, please tell me how often it is true for you?” (1 = never true; 2 = not often true; 3 = often true; 4 = almost always true)*		
	(1) I am a useful person to have around.	0.29	0.66
	(2) I feel that I’m a person of worth.	0.38	
	(3) I feel that I can’t do anything right.*	0.52	
	(4) I feel that my life is not very useful.*	0.69	
	(5) I feel I do not have much to be proud of.*	0.67	
	(6) As a person I do a good job these days.	0.32	



APPENDIX I. continued

Concept/ Variable	Description of item (Response category)	Factor loading	$\alpha$
SELF- EFFICIACY	(1) Do you think it better to plan your life a good ways ahead, or would you say life is too much a matter of luck to plan ahead very far?" (0 = too much luck to plan; 1 = plan ahead)*	0.48	0.57
	(2) "When you do make plans ahead, do you usually get to carry out things the way you expected, or do things usually come up to make you change your plans?" (0 = have to change plans; 1 = carry out way expected)*	0.58	
	(3) "Have you usually felt pretty sure your life would work out the way you want it to, or have there been times when you haven't been sure about it?" (0 = haven't been sure; 1 = pretty sure)*	0.45	
	(4) "Some people feel they can run their lives pretty much the way they want to, others feel the problems of life are sometimes too big for them. Which one are you most like?" (0 = problems of life are too big; 1 = can run own life)*	0.49	
<b>CONTROL VARIABLES</b>			
Education	"How many grades of school did you finish?" (0 through 12 for grade of school; 13 through 17+ for college)		
Attachment among family members	"Would you say your family members are ... in their feelings to each other?" (1 = not close at all; 2 = not too close; 3 = fairly close; 4 = very close)*		
Close friends	"Think of the friends, not including relatives, that you feel free to talk with about your problems—would you say that you have ... like that?" (1 = none; 2 = a few; 3 = some; 4 = many)*		

\*Refers to reverse-coded items.

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