



**Using General Strain Theory to Explain the Link between Sexual Orientation  
and Substance Use**

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**Abstract:** A number of studies have found higher rates of substance use among gay men, but the explanation for this link remains unclear. Data from a large survey of male college students are analyzed to assess the ability of general strain theory to explain the relationship between sexual orientation and frequency of alcohol and drug use. Partial support for theory is found. Childhood sexual abuse and physical abuse by parents appear to mediate the sexual orientation/substance use link. By contrast, aversive emotions, predicted by general strain theory to be positively associated with substance use, are unrelated to the outcome measure. Results are discussed and avenues for future research are suggested.

**Keywords:** Substance Use, Sexual Orientation, General Strain Theory

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### INTRODUCTION

Although the fact is not widely known, empirical research has documented a link between sexual orientation and alcohol and drug consumption. For gay men and lesbians, studies have reported higher rates of use of alcohol (Drabble, Midanik, & Trocki 2005; DuRant, Krowchuk, & Sinai, 1998) tobacco (Garafalo et al., 1998; DuRant, Krowchuk, & Sinai, 1998) marijuana (Faulkner & Cranston, 1998; DuRant, Krowchuk, & Sinai, 1998) cocaine (Garafalo et al., 1998; Faulkner & Cranston, 1998) and other illegal drugs (Faulkner & Cranston, 1998). Along with greater use, studies report a higher risk for substance abuse among individuals attracted to same-sex partners (Rotheram-Borus et al., 1995; Russell, Driscoll, & Truong, 2002).

Less understood are the reasons for the elevated risks. Some researchers have suggested that at-risk individuals might be lacking in personal resources, such as coping skills (Rotheram-Borus et al., 1995). Trocki, Drabble, and Midanik (2005) found that gay men spend more time in bars—a place conducive to the consumption of alcohol and perhaps other drugs—than straight men, but that would not explain the elevated risk of substance use experienced by gay adolescents. DuRant, Krowchuk, and Sinai (1998) note that certain youths may develop a syndrome of risky behaviors, but such a pattern suggests little about the causes of the behavior pattern.

Explanations remain unclear, but the recently developed general strain theory of deviance might help make sense of the homosexual/substance use link. General strain theory explains problematic behavior in terms of social conditions that generate aversive emotions. Compared to

heterosexuals, homosexuals living in a heteronormative society might encounter more frequently stressful circumstances that generate unpleasant emotions. These feelings must be somehow managed. Frequent consumption of alcohol and/or other tension-relieving drugs might be one coping strategy. The present study describes general strain theory and relevant research; it reviews research on strains experienced by gay men; and it describes an analysis of a large sample of male university students that assesses general strain theory's ability to explain the relationship between sexual orientation and substance use.

### GENERAL STRAIN THEORY

According to general strain theory (Agnew 1992) certain life circumstances generate high levels of stress which are then managed with deviant coping strategies. According to the perspective, there are three broad types of strain: 1) the failure to achieve positive goals, 2) the withdrawal of positively valued stimuli, and 3) the presentation of negatively valued stimuli. Strains, according to Agnew (1992), can generate anger, frustration, depression, anxiety, and other negative emotional states. An individual adopts coping strategies in order to manage the unpleasant emotions caused by strain. Coping strategies enable one to minimize or eliminate the experience of strain. Deviance is one of several ways that one responds to distressful circumstances. The response is conditioned by a number of variables, including the attribution of blame to others, the availability of legal coping resources, the degree of conventional social support, and one's predisposition toward crime (Agnew, 2006).

Youths who blame strain on others are likely to experience frustration, anger, and a desire for revenge (Jang & Johnson 2003). Discrimination, for example, is a type of strain that leads to other-directed blame (Kaufman et al., 2008). Further, if the source of the strain is perceived to be non-specific, one lacks a particular target for retaliation and might experience despair, hopelessness, and depression (Piquero, 2005; Piquero & Sealock, 2004).

Although it was developed less than two decades ago, general strain theory has garnered an impressive amount of empirical support (Agnew, 2006). The theory has been employed to explain relationships between delinquency and a range of negative life conditions and events, such as high school dropout (Drapela, 2006); unemployment (Baron, 2008); physical and sexual abuse (Brezina, 1998; Hay, 2003); family conflict (Aseltine, Gore, & Gordon 2000); negative relations with adults (Paternoster and Mazerolle 1994); poor peer relations among males (Agnew & Brezina 1997); homelessness (Baron, 2004); victimization (Agnew 2002); neighborhood problems (Paternoster & Mazerolle, 1994); and witnessing community violence (Eitle & Turner, 2002).

A number of studies have shown that various indices of strain raise the risk of delinquency (Agnew & Raskin-White, 1992; Aseltine, Gore, & Gordon 2000; Broidy, 2001; Eitle & Turner 2002; Hoffman & Miller, 1998). Research has also reported an association between several types of negative emotions and delinquency, including anger, depression, and loneliness (Broidy, 2001; Jang & Johnson, 2003; Mazerolle & Piquero, 1997; Piquero & Sealock, 2000).

Consistent with the theory, studies have found a direct relationship between strain and illicit drug use. In a study of male and female adolescents, Agnew and Raskin-

White (1992) reported a substantial association between different types of strain and drug use. Mazerolle et al. (2000) found among teenagers an effect of strain on the use of drugs that is conditioned by social bonds and exposure to delinquent associations.

To date, less general strain theory research has been devoted to how delinquency is linked to various dimensions of social stratification. Most of the studies in this area have focused on gender (Broidy & Agnew, 1997; Eitle, 2002; Hay, 2003; Hoffmann & Su, 1997; Jang 2007; Mazerolle, 1998; Piquero & Sealock, 2004; Sharp et al., 2001). Recent theoretical work (Kaufman et al., 2008) has been developed to elaborate the linkages between minority status and crime, but only a few studies have empirically assessed the relationship (Jang, 2007; Jang & Johnson, 2003; Simons et al., 2003). With few exceptions, the theory has not been utilized to explain how high rates of delinquency might be generated by the strain associated with inequality and discrimination. An example of an exception is Eitle's (2002) study of young females. The author found that women who perceived themselves to be victims of major gender-based discrimination were significantly more at risk of crime than other females.

One dimension of social stratification that has not been studied in this context, and that is, in fact, little studied by criminologists in general is sexual orientation. As with other domains of inequality, general strain theory might effectively serve as a theoretical framework within which to organize relationships between sexual identity and discrimination, on the one hand, and strain and deviance on the other.

## SEXUAL ORIENTATION, STRAIN, AND SUBSTANCE USE

As described above, homosexuals experience elevated risks of alcohol and drug consumption, along with a greater risk of substance abuse. Researchers have identified stressful circumstances commonly experienced by gay men and women. Negative social reactions and stigma have been found to produce social isolation, psychological distress, and low self-worth. (Caldwell et al., 1998; Fergusson, Horwood, & Beautrais, 1999; Garafalo et al., 1999; Smith, Lindsay, & Rosenthal, 1999). Lesbians, gays, and bisexuals (LGB) commonly experience prejudice and discrimination (Stein & Cabaj, 1996). Studies have documented that some individuals refuse to rent to LGBs (Neisen, 1990). Other examples of discrimination

include unfair treatment by peers, friends, and family; denial of employment or job promotions; and ridicule and offensive jokes (Selvidge, 2000).

Rejection of this sort causes some gay men to conceal their sexual orientation and can lead to feelings of inadequacy, guilt, depression, and anxiety (Center for Substance Abuse Treatment, 2001). Many internalize homophobic attitudes (Grossman, 1997; Ross & Rosser 1996; Stein & Cabaj, 1996). Studies have reported negative mental health outcomes for lesbians, gay men, and transgendered individuals experiencing social stigma (Diaz & Ayala, 2001; Mays & Cochran, 2001). Those not committed to a particular identity also report stress stemming from friends urging them to adopt a gay lifestyle (Smiley, 1997).

**Table 1.** Hypotheses of the relationships between independent variables and alcohol/drug use.

<u>Independent Variable</u>	<u>Direction of hypothesized relationship</u>
Homosexual	Positive
Year of birth	Positive
White	Negative
Religiosity	Negative
Physical Abuse	Positive
Sexual Abuse	Positive
Nervous	Positive
Suicidal	Positive
Moody	Positive
Revenge	Positive

In a heteronormative society, a homosexual might experience the sort of strain that is perceived as unjust. Homophobia, social stigma, and discrimination are social conditions and are not the result of one's misbehavior. A feeling of mistreatment is expected, but

there may not be specific individuals to blame.

Anger and frustration may turn to despair as one perceives that the injustice is general and impervious to remedy.

## HYPOTHESES

These considerations and the logic of general strain theory suggest a number of hypotheses concerning the predictors of substance use. Table 1 displays hypothesized relationships between the consumption of alcohol and drugs, on the one hand, and sexual orientation, measures of strain, and control variables on the other. According to the theory, men with a homosexual orientation should use alcohol and drugs more frequently than heterosexual men. As described above, homosexuals experience circumstances associated with their sexual orientation status that generate aversive emotions. Sexual orientation, then, serves as a proxy for strained circumstances.

The homosexual/substance use link should persist even in a multivariate model that includes relevant controls. Theory and research suggests a number of control measures. Age is predicted to be negatively associated with substance use. Compared to adolescence, adulthood is an emotionally more stable developmental stage and thus less characterized by aversive emotions that can result in extreme behaviors. Landsford et al. (2008) found that substance use rises through mid-adolescence and begins to decline in late adolescence and early adulthood. Non-whites are predicted to consume alcohol and drugs more frequently than whites, given that they, as a group, experience more strains associated with minority status. According to Shih et al. (2010) Hispanic youths, but not African Americans, report consuming higher levels of drugs and alcohol. General strain theory predicts that religiosity should reduce substance use since it serves as a resource and buffer against various types of strain. The link between religious commitment and reduced substance use is well established (Edlund et al., 2010; Piquero & Sealock 2000).

Several measures of strain are expected to increase the frequency of drug and alcohol consumption. Adult anxiety disorders have been linked to childhood physical and sexual abuse (Cougler, et al., 2010). A number of studies have reported that both childhood physical and sexual abuse predict later substance use and abuse (Kim & Williams, 2009; Lo & Cheng, 2007; Raskin & Widom, 2008; Shin, Hong, & Hazen, 2010). General strain theory predicts that, all else being equal, aversive emotions will raise the risk of a deviant response (Agnew, 2006). It is hypothesized that feelings of nervousness, depression, moodiness, and vengefulness will predict self-medication in the form of substance use. Finally, if general strain theory is correct, any link between sexual orientation and substance use will be mediated, at least partially, by strains and their associated negative emotions.

## DATA AND METHODS

The data analyzed in the present study were taken from the male sample of the 1990-1995 Longitudinal Study of Violence Against Women (White, Smith, & Humphrey, 2001). Although the focus of the study was on females as victims of violence, the researchers were also interested in violent crime perpetrated against males, so a random sample of male students was included. The female students were asked a different set of questions and are thus not included in the present study.

The sample was drawn from a large university, and the authors indicated that it is demographically representative of undergraduate males in state-supported universities in the United States. Students were first surveyed their freshman year and again each year for the next four years. Questionnaires were completed the first time during a freshman orientation. Students who did not attend orientation, which was not

required, were contacted by phone. The freshman wave was chosen for analysis in the present study since it has the largest sample size.

Mean substitution (Nisbet, Elder, & Miner, 2005) of the variables employed in this analysis was used to maximize sample size and to maintain sample consistency across different multivariate models: this strategy yielded 723 cases. The dependent variable is an index of the frequency of use of alcohol, marijuana, and other drugs. For each of the three questions, the answer choices were: never (1), less than once a month (2), one to three times a month (3), one to two times a week (4), and more than two times a week (5). Answers to the three questions were summed in order to create an index. Means and standard deviations (in parentheses) for the three substance use items were as follows: 1) alcohol frequency, 2.58 (1.28); 2) marijuana frequency, 1.48 (.92); 3) other drug frequency, 1.15 (.46). Cronbach's alpha for the three items is .71, which indicates that the items are tapping an underlying construct (i.e., substance use). Skewness and kurtosis statistics indicated a normally distributed variable.

Respondents were asked their sexual orientation, and due to the small number of males indicating that they were gay, bisexual men were also scored as one, while heterosexual men were given a zero. This approach yielded a total of 39 non-heterosexuals. As described above, there is evidence that a homosexual orientation is a stigmatized social status and can therefore serve as a proxy for circumstances and experiences that generate negative emotions. In place of age, students were asked in which year they were born. Race of respondent was categorized as either white (1) or non-white (0). Answers to the question of the influence of religion on how a person spends his or her day ranged from no influence (1) to a great deal (4). Students were asked how frequently they were hit, kicked, or thrown to the floor per month by parents when they lived at home. Answers varied from never (1) to 20+ times (5). Child sexual abuse is measured as the summed score of answers to the frequency of: being shown a sexual organ; being fondled; and attempted and completed sexual intercourse. For each question, answers range from never (1) to 5+ times (5).

**Table 2.** Descriptive Statistics,  $N = 723$ .

<u>Variables</u>	<u>Mean</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Std. Dev.</u>
Frequency of alcohol, marijuana, and other drug use	5.24	3	14	2.18
Homosexual or bisexual orientation	0.05	0	1	0.23
Year of birth	1972.50	1970	1975	1.00
White vs. non-white respondent	0.69	0	1	0.46
How much influence from religion	1.96	1	5	0.94
Frequency of being hit by parents	1.40	1	5	0.79
Frequency of being shown a sexual organ, fondled, and attempted/complete intercourse as child	5.35	4	11	1.82
How well "bothered by nervousness" describes respondent	2.47	1	5	1.17
How well "think about taking life" describes respondent	1.27	1	5	0.62
How well "moody and brooding" describes respondent	2.29	1	5	0.95
How well "desire for revenge" describes respondent	1.70	1	5	0.85

Cronbach's alpha for this index is .72. For negative emotions, respondents were asked how well having the following emotions described them (with answers ranging from not at all (1) to very well (5)): being bothered by nervousness; having thoughts of suicide; being moody and brooding; and having a desire for revenge.

Ordinary least squares regression analysis is the appropriate analytic technique for a multivariate model with a ratio-level dependent variable that is normally distributed (Beck-Lewis, 1980). In order to assess the hypothesis that measures of strain mediate the relationship between sexual orientation and substance use, mediation analysis will be employed as described in Baron and Kenny (1986). The first step is demonstrate an association between the predictor of interest—sexual orientation—and the outcome variable—in the present case, a measure of substance use. Second, each of the hypothesized mediators should be regressed on the measure of sexual orientation in order to show that they are significantly related to the latter. Third, sexual orientation should be entered into a model with all mediators (and controls) in order to demonstrate that the mediators significantly predict substance use, net of the influence of sexual orientation, and to demonstrate that sexual orientation's effect is partially or completely mediated by the inclusion of the mediators in the final model. The relationship is completely mediated if the sexual orientation coefficient is reduced to zero in the final model; the relationship is only partially mediated if the sexual orientation effect is reduced from the model that has no mediators, but remains a non-zero coefficient.

## RESULTS

Table 2 displays the descriptive statistics for substance use and for the ten

independent variables. Frequency of drug and alcohol use ranges widely. Five percent of the sample—39 respondents, to be exact—describe themselves as homosexual or bisexual. Since respondents were interviewed as freshmen in 1990, their mean age is approximately 18. Sixty-nine percent of the sample is white. Mean self-reported religiosity was close to two, indicating that religion having “some influence” was the most typical answer. The frequency of physical and sexual abuse varied widely, as did the levels of negative emotions. Table 3 lists ordinary least squares estimates (both unstandardized and standardized) for eight separate models. Equation 1 estimates the relationship between sexual orientation and substance use, net of the influence of control variables. Equations 2 through 7 estimate the net effect of sexual orientation on each of the six potential mediators. Finally, Equation 8 regresses substance use on all predictors: the measure of sexual orientation, the control measures, and the potential mediators.

The sample size is 723 male students in all models. In Equation 1, homosexual orientation predicts more frequent substance use (although the relationship is weak, as indicated by the standardized coefficient). The effect is statistically significant, net of the influence of the control variables. Students born in earlier years (i.e., older respondents) tend to use less often, while those who are more religious are significantly less likely to consume alcohol and drugs frequently. By contrast, race is unrelated to the outcome measure.

In Equation 2, being homosexual, net of controls, is positively associated with more frequent childhood physical abuse by parents. Similarly, a same significant positive relationship between a homosexual orientation and frequency of childhood sexual abuse is observed in Equation 3. In

Equations 4 through 7, sexual orientation is associated with three out of four measures of negative emotions: homosexual men, as a group, report more nervousness, suicidal thinking, and moodiness, but no more desire

for revenge. Vengefulness, therefore, cannot mediate the relationship between sexual orientation and substance use since it is unrelated to sexual orientation.

**Table 3.** OLS Regression Coefficients (standardized coefficients in parentheses), N = 723.

	(1) <u>Substance Use</u>	(2) <u>Physical Abuse</u>	(3) <u>Sexual Abuse</u>	(4) <u>Nervous</u>	(5) <u>Suicidal</u>	(6) <u>Moody</u>	(7) <u>Vengeful</u>	(8) <u>Substance Use</u>
Homosexual	.59* (.06)	.56** (.16)	2.10** (.26)	.58** (.11)	.43** (.16)	.64** (.12)	.07 (.04)	-.07 (-.01)
Year of birth	.14* (-.08)	.04 (-.05)	.08 (-.04)	.02 (-.02)	.04 (-.06)	.01 (-.01)	.03 (.04)	.15* (-.07)
White	-0.03 (-.01)	-.04 (-.02)	-.02 (-.01)	.02 (.01)	-.04 (-.03)	.00 (.00)	.02 (.01)	-.01 (.00)
Religiosity	-.72** (-.31)	-.08** (-.09)	-.13* (-.06)	-.04 (-.03)	-.07** (-.11)	-.06 (-.05)	-.02 (-.03)	-.66* (-.28)
Physical Abuse	--	--	--	--	--	--	--	.22* (.08)
Sexual Abuse	--	--	--	--	--	--	--	.20** (.17)
Nervous	--	--	--	--	--	--	--	.05 (.03)
Suicidal	--	--	--	--	--	--	--	.18 (.05)
Moody	--	--	--	--	--	--	--	.09 (.04)
Revenge	--	--	--	--	--	--	--	-.02 (-.01)
Constant	357.00*	78.31	158.15	37.83	74.36	10.87	-56.61	291.63*
R <sup>2</sup>	.11	.04	.08	.02	.04	.02	.00	.15

\*p < .05, one-tailed

\*\*p < .01, one-tailed

All of the predictors are included in Equation 8, with frequency of substance use serving as the outcome variable. While Equation 1 had shown a significant association between sexual orientation and substance use, net of controls, the effect has been reduced to non-significance in the full model, and the unstandardized coefficient is near zero. As for controls, older students consume alcohol and drugs less frequently than younger students. Greater religiosity predicts less use, and the standard coefficient indicates a comparatively strong

effect. Race, by contrast, is unrelated to frequency of substance use.

Turning to measures of strain, both physical and sexual abuse raise the risk of frequent alcohol and drug consumption. The standardized coefficient indicates that sexual abuse exerts a comparatively strong influence. On the other hand, none of the negative emotions is significantly related to the outcome measure. The coefficients for suffering from nervousness, suicidal ideation and moodiness are all in the positive direction as hypothesized, but all

fail to reach statistical significance. Vengefulness is unrelated to substance use, and the coefficient is in the opposite direction of the hypothesis.

The pattern of net results from all the models indicates that the positive association between sexual orientation is mediated by physical and, especially, sexual abuse. Both physical and sexual abuse are significantly related to being homosexual, and their inclusion in an full regression model reduces the sexual orientation/substance use association to statistical non-significance, with a coefficient not differing much from zero.

## DISCUSSION AND CONCLUSION

The present analysis provides mixed support for hypotheses derived from general strain theory. As predicted, male college students who are homosexual, on average, use drugs and alcohol more frequently than their heterosexual counterparts. This finding is consistent with prior research (Drabble, Midanik & Trocki, 2005; DuRant, Krowchuk, & Sinai, 1998). Older students in the present study used less frequently—a finding in line with prior research (Landsford et al., 2008) and consistent with the hypothesis that adulthood is less stressful than adolescence. Non-white students were not found to use alcohol and drugs more frequently than whites, contrary to the hypothesis that stress associated with minority status would lead to greater use. Other research has reported that young whites are more likely to drink alcohol and to use drugs (Watt & Rogers, 2007). According to Agnew (2006) the types of strain the lead to deviant responses can vary by demographic group. Students who reported greater religiosity were found to consume drugs and alcohol less frequently. The standardized coefficient indicates that this effect is the strongest of all those estimated in the full model. Such a finding

supports the consensus of prior research (Edlund, 2010) and is consistent with the general strain theory view that religion can serve as a protection against deviance-producing strain.

Family physical abuse as well as childhood sexual abuse were found to increase substance use frequency, a pattern identified in other research (Kim & Williams, 2009; Raskin & Widom, 2007). Sexual abuse, in particular, was predictive. Mediation analysis revealed that a homosexual orientation is positively associated with both physical and sexual abuse, and the inclusion of these two predictors in the multivariate model reduces the sexual orientation-substance use link substantially. In other words, results from the present analysis are consistent with the view that the higher rates of childhood physical and sexual abuse experienced by gay men help explain their more frequent consumption of alcohol and drugs. The finding of higher rates of physical and sexual abuse for homosexuals during childhood has been reported in other studies (Corliss, Cochran, & Mays, 2001; Harry, 1989).

The higher rates of physical abuse from parents and sexual abuse from people in general experienced by homosexuals might be due to their being targeted for gender non-conformity. Homosexual boys may experience a higher risk of physical abuse from parents in cases in which behavior is not gender-typical. Anti-gay hostility might also lead others to target homosexual boys for sexual abuse. These traumatized boys, in turn, may turn to alcohol and illicit drugs to manage psychologically their victimization. According to Agnew (2001), strain is especially likely to lead to problematic behavior if it is severe; if it has been of long duration; and if it is central to a person's needs, values, and identity. Family physical

abuse and sexual abuse during childhood certainly seem to possess these characteristics.

By contrast, none of the negative emotions examined—nervousness, suicidal ideation, moodiness, or vengefulness—were found to mediate the link between sexual orientation and substance use. While gay men were found to be significantly more bothered by nervousness, more suicidal, and moodier (but not more vengeful) these negative emotions were not predictive of more frequent substance use. This contradicts numerous studies which have found that a range of aversive emotions are positively related to substance use (Brunswick, Lewis, & Messeri 1991; Cheetham et al., 2010; Shoal, Castaneda, & Giancola, 2005). It is possible that the single-item measures of emotion used in this study suffer from low reliability and validity. Future studies might profit from multi-item indices, particularly those inquiring about how often specific negative emotions are experienced. The current study, nevertheless, offers little evidence that negative feelings lead to an increase of the consumption of drugs and alcohol and mediate the homosexual/substance use link.

One methodological limitation of this study is that while the pattern of results is consistent with the hypothesis that the strains associated with physical and sexual abuse mediate the link between sexual orientation and substance abuse, it does not demonstrate the actual causal structure (Baron & Kenny, 1986). Alternative interpretations are possible. For example,

childhood abuse might lead to greater substance use through increased rejection of authority rather than through negative emotions. Negative emotions, in the present study, were not predictive of drug and alcohol consumption. Perhaps future research can yield more definitive answers.

Another limitation of this analysis is the assumption that a homosexual orientation is a stressful social status. While there is empirical evidence to support the idea, actually measuring strain is preferable to assuming it. The tentative findings of the present study might be strengthened if data were collected on the types and levels of prejudice and discrimination experienced by young gay men, and if these measures turned out to be predictive of aversive emotions and, in turn, greater substance use.

More generally, a long tradition of social research has documented a positive relationship between various dimensions of inequality and certain types of crime and deviance (Hagan & Peterson, 1995). Traditionally, researchers turned to classical versions of strain theory (Cohen, 1955; Cloward & Ohlin, 1960; Merton, 1968) to make sense of these links, but in recent decades, the perspective has come under serious criticism, in terms of both its theoretical and empirical adequacy (Akers, 1994; Kornhauser, 1978). General strain theory appears to have the explanatory power to organize many findings concerning the relationship between inequality and deviance. It is hoped that researchers will expand the exploration of this potentially fruitful area of research.

## REFERENCES

- Agnew, R. (1992). Foundation for a General Strain Theory of Crime and Delinquency. *Criminology*, 31, 47–87.
- Agnew, R. (2001). Building on the Foundation of General Strain Theory: Specifying the Types of Strain Most Likely to Lead to Crime and Delinquency. *Journal of Research in Crime and Delinquency*, 38, 319–336.
- Agnew, R. (2002). Experienced, Vicarious, and Anticipated Strain: An Exploratory Study on Physical Victimization and Delinquency. *Justice Quarterly*, 19, 603-632.
- Agnew, R. (2006). *Pressured into Crime: An Overview of General Strain Theory*. Los Angeles: Roxbury.
- Agnew, R. & Brezina, T. (1997). Relational Problems with Peers, Gender, and Delinquency. *Youth and Society*, 29, 84-111.
- Agnew, R. & Raskin-White, H. (1992). An Empirical Test of General Strain Theory. *Criminology*, 30, 475-499.
- Akers, R.L. (1998). *Social Learning and Social Structure: A General Theory of Crime and Deviance*. Belmont, CA, Wadsworth.
- Aseltine Jr, R.H., Gore, S & Gordon, J. (2000). Life Stress, Anger, Anxiety, and Delinquency: An Empirical Test of General Strain Theory. *Journal of Health and Social Behavior*, 41, 256-275.
- Baron, S.W. (2004). General Strain, Street Youth, and Crime: A Test of Agnew's Revised Theory. *Criminology*, 42, 457– 483.
- Baron, S.W., (2008). Street Youth, Unemployment, and Crime: Is it That Simple? Using General Strain Theory to Untangle the Relationship. *Canadian Journal of Criminology and Criminal Justice*, 50, 399-434.
- Baron, R.M. & Kenny, D.A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic and Statistical Considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.
- Beck-Lewis, M.S. (1980). *Applied Regression: An Introduction*. Thousand Oaks, CA: Sage Publications.
- Brezina, T. (1998). Adolescent Maltreatment and Delinquency: The Question of Intervening Processes. *Journal of Research in Crime and Delinquency*, 35, 71-99.
- Broidy, L.M., (2001). A Test of General Strain Theory. *Criminology*, 39, 9–31.
- Broidy, L.M. & Agnew, R. (1997). Gender and Crime: A General Strain Theory Perspective. *Journal of Research in Crime and Delinquency*, 34, 275-306.
- Brunswick, A.F., Lewis, C.S., & Messeri, P.A. (1991). A Life Span Perspective on Drug Use and Affective Distress in an African-American Sample. *Journal of Community Psychology*, 19, 123-135.
- Caldwell, L. L., Kivel, B.D., Smith, E.A., Hayes, D. (1998). The Leisure Context of Adolescents Who Are Lesbian, Gay Male, Bisexual, and Questioning Their Identities: An Exploratory Study. *Journal of Leisure and Research*, 30, 341-355.
- Center for Substance Abuse Treatment. (2001). *A Provider's Introduction for Lesbian, Gay, Bisexual and Transgender Individuals*. Rockville, MD: CSAT.
- Cheetham, A., Allen, N.D., Yücel, M., & Lubman, D.I. (2010). The Role of Affective Dysregulation in Drug Addiction. *Clinical Psychology Review*, 30, 621-634.
- Cloward, R.A & Ohlin, L.E. (1960). *Delinquency and Opportunity*. New York: Free Press of Glencoe.
- Cohen, A.K. (1955). *Delinquent Boys*. New York: Free Press of Glencoe.
- Cogle, J.R., Timpano, K.R., Sachs-Ericsson, N., Keough, M.E., Riccardi, C.J. (2010). Examining the Unique Relationships between Anxiety Disorders and Childhood Physical and Sexual Abuse in the National Comorbidity Survey-Replication. *Psychiatry Research*, 177, 150-155.

- Corliss, H.L., Cochran, S.D., Mays, V.M. (2002). Reports of Parental Maltreatment during Childhood in a United States Population-Based Survey of Homosexual, Bisexual, and Heterosexual Adults. *Child Abuse and Neglect*, 26, 1165-1178.
- Diaz, R.M. & Ayala, G. (2001). *Social Discrimination and Health: The Case of Latino Gay Men and HIV Risk*. Washington DC: National Gay and Lesbian Task Force.
- Drabble, L., Midanik, L.T., & Trocki, K. (2005). Reports of Alcohol Consumption and Alcohol-Related Problems among Homosexual, Bisexual and Heterosexual Respondents: Results from the 2000 National Alcohol Survey. *Journal of Studies on Alcohol*, 66, 111-120.
- Drapela, L.A. (2006). The Effect of Negative Emotion on Licit and Illicit Drug Use among High School Dropouts: An Empirical Test of General Strain Theory. *Journal of Youth and Adolescence*, 35, 755-770.
- DuRant, R.H., Krowchuk, D.P., Sinai, S.H. (1998). Victimization, Use of Violence, and Drug Use at School among Male Adolescents Who Engage in Same-sex Sexual Behavior. *Journal of Pediatrics*, 133, 113-118.
- Edlund, M.J., Harris, K.M., Koenig, H.G., Xiaotong, H., Sullivan, G., Mattox, R., & Lingqi, T. (2010). Religiosity and Decreased Risk of Substance Use disorders: Is the Effect Mediated by Social Support or Mental Health Status? *Social Psychiatry and Psychiatric Epidemiology*, 45, 827-836.
- Eitle, D.J. (2002). Exploring a Source of Deviance-Producing Strain for Females: Perceived Discrimination and General Strain Theory. *Journal of Criminal Justice*, 30, 429-442.
- Eitle, D.J., & Turner, J.R. (2002). Exposure to Community Violence and Young Adult Crime: The Effects of Witnessing Violence, Traumatic Victimization, and Other Stressful Life Events. *Journal of Research in Crime and Delinquency*, 39, 214-237.
- Fergusson, D.M., Horwood, L.J., Beautrais, A.L. (1999). Is Sexual Orientation Related to Mental Health Problems and Suicidality in Young People? *Archives in General Psychiatry*, 56, 876-880.
- Faulkner, A.H., Cranston, K. (1998). Correlates of Same-Sex Sexual Behavior in a Random Sample of Massachusetts High School Students. *American Journal of Public Health*, 88, 262-266.
- Garofalo R., Wolf, R.C., Kessel, S., Palfrey, J., DuRant, R.H. (1998). The Association between Health Risk Behaviors and Sexual Orientation among a School-based Sample of Adolescents. *Pediatrics*, 101, 859-902.
- Garofalo, R., Wolf, R.C., Wissow, L.S., Woods, E.R., Goodman, E. (1999). Sexual Orientation and Risk of Suicide Attempts among a Representative Sample of Youth. *Archives of Pediatrics and Adolescent Medicine*, 153, 487-493.
- Hagan, J., & Peterson, R. (1995). *Crime and Inequality*. Stanford, CA: Stanford University Press.
- Harry, J. 1989. "Parental Physical Abuse and Sexual Orientation in Males." *Archives of Sexual Behavior* 18:251-261.
- Hay, Carter. 2003. "Family Strain, Gender, and Delinquency." *Sociological Perspectives* 46:107- 135.
- Hoffman, J.P., & Gray-Cerbone, F. (1999). Stressful Life Events and Delinquency Escalation in Early Adolescence. *Criminology*, 37, 343-373.
- Hoffman, J.P. & Miller, A.S. (1998). A latent variable analysis of general strain theory. *Journal of Quantitative Criminology*, 14, 83-110.
- Hoffmann, J, P. & Su, S, S., (1997). The Conditional Effects of Stress on Delinquency and Drug Use: A Strain Theory Assessment of Sex Differences. *Journal for Research in Crime and Delinquency*, 34, 46-78.
- Jang, S.J. (2007). Gender Differences in Strain, Negative emotions, and Coping Behaviors: A General Strain Theory Approach. *Justice Quarterly*, 24, 523-553.
- Jang, S.J., Johnson, B. (2003). Strain, Negative Emotions, and Deviant Coping among African-Americans: A Test of General Strain Theory. *Journal of Quantitative Criminology*, 19, 79-105.
- Kaufman, J.M., Rebellon, C.J., Thaxton, S., & Agnew, R. (2008). A General Strain Theory of Racial Differences in Criminal Offending. *The Australian and New Zealand Journal of Criminology*, 41, 421-437.

- Kim, J., Williams, S. (2009). Linking Childhood Maltreatment to Substance Use in College Students: The Mediating Role of Self-Worth Contingencies. *Journal of Aggression, Maltreatment and Trauma*, 18, 88-105.
- Kornhauser, R. R. (1978). *Social Sources of Delinquency*. Chicago: University of Chicago Press.
- Lansford, J.E., Erath, S., Tianyi, Y., Pettit, G.S., Dodge, K.A., & Bates, J.E. (2008). The Developmental Course of Illicit Substance Use from Age 12 to 22: Links with Depressive, Anxiety, and Behavior Disorders at Age 18. *Journal of Child Psychology and Psychiatry*, 49, 877-885.
- Lo, C.C., & Cheng, T.C. (2007). The Impact of Childhood Maltreatment on Young Adults' Substance Abuse. *American Journal of Drug and Alcohol Abuse*, 33, 139-146.
- Mazerolle, P. (1998). Gender, General Strain, and Delinquency: An Empirical Examination. *Justice Quarterly*, 15, 65-91.
- Mazerolle, P. & Piquero, A. (1997). Violent Responses to Strain: An Examination of Conditioning Influences. *Violence and Victims*, 12, 323-343.
- Mazerolle, P., Burton, V.S., Cullen, F.T., Evans, D., Payne, G.L. (2000). Strain, Anger, and Delinquent Adaptations: Specifying General Strain Theory. *Journal of Criminal Justice*, 28, 89-101.
- Mays, V. M., & Cochran S.D. (2001). Mental Health Correlates of Perceived Discrimination among Lesbian, Gay, and Bisexual Adults in the United States. *American Journal of Public Health*, 91, 1969-1876.
- Merton, R.K. (1968). *Social Theory and Social Structure*. New York: The Free Press.
- Neisen, J.H. (1990). Heterosexism: Redefining Homophobia for the 1990's. *Journal of Gay and Lesbian Psychotherapy*, 1, 21-35.
- Nisbet, R., Elder, J., Miner, G. (2005). *Handbook of Statistical Analysis and Data Mining Applications*. San Diego: Academic Press.
- Paternoster, R., & Mazerolle, P. (1994). General Strain Theory and Delinquency: A Replication and Extension. *Journal of Research in Crime and Delinquency*, 31, 235-263.
- Piquero, N.L. (2005). Understanding Police Stress and Coping Resources across Gender: A Look Toward General Strain Theory. Pp. 126-139 in *Policing and stress*, edited by H. Copes. Upper Saddle River, NJ: Prentice Hall.
- Piquero, N.L. & Sealock, M.D. (2000). Generalizing General Strain Theory: An Examination of an Offending Population. *Justice Quarterly*, 17, 449-483.
- Piquero, N.L. & Sealock, M.D. (2004). Gender and General Strain Theory: A Preliminary Test of Broidy and Agnew's Gender/GST Hypothesis. *Justice Quarterly*, 21, 125-158.
- Raskin, H.R., & Widom, K. (2008). Three Potential Mediators of the Effects of Child Abuse and Neglect on Adulthood Substance Use among Women. *Journal of Studies on Alcohol and Drugs*, 69, 337-347.
- Rotheram-Borus M.J., Rosario, M., & Van Rossem, R. (1995). Prevalence, Course, and Predictor of Multiple Problem Behaviors among Gay and Bisexual Male Adolescents. *Developmental Psychology*, 31, 75-85.
- Ross, M. W. & Rosser, S.B. (1996). Measurement and Correlates of Internalized Homophobia: A Factor Analytic Study. *Journal of Clinical Psychology*, 52, 15-20.
- Russell, S.T., Driscoll, A.K., Truong, N. (2002). Adolescent Same-Sex Romantic Attractions and Relationships: Implications for Substance Use and Abuse. *American Journal of Public Health*, 92, 198-202.
- Selvidge, M.M. (2000). *The Relationship of Sexist Events, Heterosexist Events, Self-Concealment, and Self-Monitoring to Psychological Well-being in Lesbian and Bisexual Women*. Unpublished doctoral dissertation, University of Memphis, Tennessee.
- Shih, R.A., Jeremy N.V., Miles, J.S., Tucker, A.J., Zhou, S., & D'Amico, E.J. (2010). Racial/Ethnic Differences in Adolescent Substance Use: Mediation by Individual, Family, and School Factors. *Journal of Studies on Alcohol and Drugs*, 71, 640-651.
- Shin, S.H., Hong, H.G., Hazen, A.L. (2010). Childhood Sexual Abuse and Adolescent Substance Use: A Latent Class Analysis. *Drug and Alcohol Dependence*, 109, 226-235.

- Shoal, G.D., Castaneda, J.O., Giancola, P.R. (2005). Worry Moderates the Relation between Negative Affectivity and Affect-Related Substance Use in Adolescent Males: A Prospective Study of Maladaptive Emotional Self-Regulation" *Personality & Individual Differences*, 38, 475-485
- Simons R.L., Chen, Y., Stewart, E.A., Brody, G.H. (2003). Incidents of Discrimination and Risk for Delinquency: A Longitudinal Study of Strain Theory with an African American Sample. *Justice Quarterly*, 20, 827-854.
- Smiley, E.B. (1997). Counseling Bisexual Clients. *Journal of Mental Health Counseling*, 19, 373-382.
- Smith, M.A., Lindsay, J., & Rosenthal, D. (1999). Same-Sex Attraction, Drug Injection and Binge Drinking among Australian Adolescents. *Australian and New Zealand Journal of Public Health*, 23, 643-646.
- Stall, R., Paul, J.P., Greenwood, G., Pollack, L.M., Bein, E., & Crosby, G.M. (2001). Alcohol Use, Drug Use, Alcohol-Related Problems among Men Who Have Sex with Men: The Urban Men's Health Study. *Addiction*, 96, 1589-1601.
- Stein, T.S., & Cabaj, R.P. (1996). Psychotherapy and Gay Men. (Pp. 413-432) in *Textbook of Homosexuality and Mental Health*, edited by Robert P. Cabaj and Terry S. Stein. Washington, DC: American Psychiatric Press.
- Trocki, K.F., Drabble, L., & Midanik, L. (2005). Use of Heavier Drinking Contexts among Heterosexuals, Homosexuals and Bisexuals: Results from a National Household Probability Survey. *Journal of Studies on Alcohol*, 66, 105-110.
- Watt, T., & Rogers, J. (2007). Factors Contributing to Differences in Substance Use among Black and White Adolescents. *Youth & Society*, 39, 54-74.
- Warr, M. (2002). *Companions in Crime*. Cambridge: Cambridge University Press.
- White, J W., Smith, P.H., & Humphrey, J.A. (2001). *Longitudinal Study of Violence against Women: Victimization and Perpetration among College Students in a State-Supported University in the United States, 1990-1995*. Ann Arbor, MI: Inter-university Consortium for Political and Social Research.