

**Strain, negative emotional affect, and the criminal
adaptations of women**

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ABSTRACT

This study explores the capacity of Agnew's General Strain Theory to explain the self-reported criminality of women. Using a sample of chemically addicted women, this research examines how strains with special relevance for women--losing custody of a child, homelessness, being a victim of assault, suffering from female related health problems, and getting a positive HIV diagnosis, can accumulate and lead to criminal behavior. It also explores the mediating effects of negative emotions and anger in the strain-crime relationship.

The results reveal that exposure to a greater number of strains increases the likelihood of criminal behavior. They also reveal that race and ethnicity conditions the mediating effects of anger and negative emotions. The results are discussed in light of General Strain Theory and its importance for studying crime among women.

CHAPTER ONE

INTRODUCTION

A review of early Criminology literature might lead one to assume that crime perpetrated by women is either non-existent or unimportant, since historically the focus of most criminological research has been on male offenders. The considerable amount of attention given to male criminal activity is not surprising however, since one of the few undisputable facts of the discipline is that men commit many more crimes than do women. Until recently, the scientific community tended to concentrate the majority of their efforts on the offending patterns of males, and there evolved a general agreement among scholars that theory construction and hypothesis-testing with male samples was sufficient to address the problem of crime.

Most early efforts to investigate women's crime focused on public order violations like prostitution. The explanations for female criminal involvement usually pointed to questionable morality instead of the factors commonly attributed to male criminality (see Sheldon Glueck and Eleanor Glueck, 1934; Thomas, 1923). Women's involvement in more serious crime, especially violence, was often dismissed as

undeserving of scientific scrutiny because such cases were so unusual (Harris, 1977; Weiner & Wolfgang, 1985; Simpson, 1995). Because of the perception that physical crimes committed by women were so rare, and physicality was associated with maleness, women who were involved in violent crime were often characterized as curiously masculine or mentally deranged. Overall, much of the very early literature on the criminal behavior of women suggests that researchers believed women's crime consisted almost entirely of petty theft and sexual promiscuity.

Over the past twenty years, however, sharp increases in the arrest and incarceration rates of women, and their more frequent involvement in serious crime have prompted some scholars to re-consider the importance of women to mainstream Criminology (Garland, 2001; Chesney-Lind, 1997; Heidensohn, 1989, 2002; Smart, 1979; Poe-Yamagata, 1996; Richie et al. 2000). Yet, despite the new fascination for female crime, the research that emerged with females in the samples tended to limit the investigation of gender to a control variable. This has led some feminist scholars to argue that the use of "gender" as a control variable masks the factors that predict female criminality (Chesney-Lind, 1989; Sharp et al. 2005) and thus hinders the ability to learn anything about female crime.

In other words, adding women to samples and using gender as a control variable resulted in numerous studies contrasting the criminality of males with that of females while paying little if any attention to differences in criminal behavior among women (Simpson, 1991). These kinds of studies merely reaffirmed what we already knew about gender and crime; that men commit more crimes than do women. It wasn't until some researchers became interested in finding the sources of the "gender-gap" that they began to tease apart the relationships and uncovered critical race and class differences that had been previously masked by gender. It was then that the significance of gender research to criminology began to emerge.

Findings resulting from gender gap research showed that although females are not necessarily violent as a group, their patterns of violence differ according to race (Hindelang, 1981; Laub & McDermott, 1985, Simpson, 1991) and possibly class (Simpson, 1991). For example, violent criminal involvement among black female adolescents rivals that of white males (Hindelang, 1981; Steffensmeier & Allen, 1988, Simpson, 1991). Thus, it is apparent that even without regard to other types of crime, the patterns of violent crime alone show how important it is to evaluate gender separately. In

sum, even though early on there was little in the way of research that focused solely on female criminality, gender-gap research was responsible for leading some researchers to conclude that women's crime is interesting in its own right.

Now some researchers are routinely evaluating gender separately, or are conducting studies with samples of just women (see examples in Sharp, 2001; Sharp et al, 2005; Piquero and Sealock, 2004; Mazerolle, 1998; Steffensmeier and Allan, 1996). In light of findings attributed to gender gap studies, some researchers have also discovered that through doing away with gender as a statistical control, other interesting insights into criminal behavior may also be revealed. In an analysis of Uniform Crime Report data in several large U.S. cities, Chilton and Datesman (1987) found that larceny arrests for non-white women are similar to those of white men. Moreover, arrests of non-white women accounted for a great majority of the increases seen in arrests for larceny between 1960 and 1980 (Hill and Crawford, 1990; Chilton and Datesman, 1987). These findings make clear that the intersections of race, class, and gender may hold the key to understanding differences in the number and types of crimes committed and by whom.

Traditional Theories or Theory Development

Despite the recognized need to evaluate gender separately, the progress to develop formative theories of female crime is extremely slow. One reason for the limited progress is the marked disagreement among scholars concerning whether separate theories for female offending are necessary, or if existing theories may be generalized to female populations. There are multiple levels to this complex argument, most of which are not discussed here, however it is important to provide a cursory discussion of the topic as a way to help provide some understanding of the ongoing discourse among feminist scholars.

One aspect of the debate questions the capacity of traditional empirical research, (typically characterized by large-scale surveys), to capture the lived experiences of women, or whether the objectivity and distancing that is the basis of these methods presents a masculine "way of knowing." The criminologists who support this view argue that the only way to understand women's lived experiences is within the greater context of her gendered existence, something that is lost in large-scale aggregate data (Daly, 1997; Simpson & Gibbs, 2006).

Conversely, other feminist criminologists argue that large-scale studies using traditional theories are helpful for understanding crime among women, (Chesney-Lind and Faith, 2000) and point to a great deal of empirical evidence showing the theories have done well to predict non-serious types of crime. Theories of social bonds, differential association, social control, and perceptions of risk have all demonstrated their effectiveness for the measurement of minor female offending (Steffensmeier & Allan 1996), suggesting that the concepts from traditional theories are central to the understanding of female offending (Giordano et al. 2006, Chesney-Lind and Faith, 2000). Yet most of these scholars would probably agree that that alongside more thorough testing of traditional theories, new theory development is essential.

Another central issue in the feminist criminologist debate is that risk factors for crime that are pertinent to women's lives are typically excluded from traditional theoretical explanations. Placing females in a male crime model may even prove to be ineffective in the sense that women's social roles expose them to vastly different experiences than those that men experience in both the public and private spheres. As such, some traditional theories may be satisfactory in predicting low-level crime among females, but they might not

be sensitive to the more serious ones, and therefore might be unable to detect nuances in how paths to crime differ according to gender (Steffensmeier & Allan 1996).

A simple example makes clear the potential for disconnect between a traditional crime theory and the female offender. Merton's (1938) strain theory claims delinquent behavior is an adaptation to structural barriers that tend to diminish one's ability to meet the universal goal of economic success. Feminist scholars point out that women as a group face greater barriers to economic success than men face, yet are still much less likely to commit crime. Sociological Stress Process research lends empirical credibility to this argument by showing that even though women, especially those who are single, are profoundly affected by financial strain, men are much more likely to report financial strain as a major source of distress, and according to Mirowsky & Ross (2003), distress is positively associated with anti-social behavior. This evidence suggests that different stressors or "strains" may have diverse affects on criminal outcomes according to gender. If certain strains contribute differentially to deviance, then clearly there must be implications for gender differences in paths to and opportunities for criminal behavior.

Despite speculation concerning gender differences in paths and opportunities, it is important to recognize the similarities of the social backgrounds of male and female offenders. For instance, low socioeconomic status, poor education, unemployment, under employment, and minority status, characterize both the male and female offender. What sets male and female social profiles apart is that women are more likely to have dependent children in their care (Steffensmeier and Allan 1996). Other gender similarities of a more macro-social nature are that the rates of female and male crime both respond to the same social and legal forces independent of conditions unique to gender. For instance, geographically, when male crime is high, female crime is high and visa versa (Steffensmeier and Allan 1996). One must conclude that macro social conditions such as high levels of economic inequality and poverty effect men and women similarly, but we cannot be sure if they are affected by these conditions equally in level or kind. For example, Heimer, Wittrock & Unal (2006) argue that across cities and over time, places where women suffer the greatest economic oppression, the proportion of female to male arrests increase, indicating that marginalization and poverty are not only contributing

factors to female crime, but that the mechanisms in the crime poverty relationship may differ by gender.

To be sure, the types of discrimination and oppression experienced by women are different from those experienced by men. Their subjection to lower wages, lower level jobs or pink-collar jobs, their burden of childcare and other family responsibilities, unequal physical strength, and the general history that surrounds the expectations of the female social role must all be considered when evaluating motivations for crime (risk factors) and the choices of coping mechanisms. These factors must also be considered within the group "female"; sources of discrimination and oppression and the ways that cultural differences influence differences in risk factors and coping may differ.

In sum, the goals for theory development and for the evaluation of existing theories of crime are to identify those factors that can capture the lives of women and their status as a group in society and capture the ways in which they adapt to the gendered lives they live. It is important to keep in mind that women are confronted with a variety of oppressive conditions that may well be the basis of their offending behavior (Broidy & Agnew 1997).

Agnew's General Strain Theory (GST), (1985, 1992, 2001), may provide an existing traditional theory that can offer a starting point for examining risk factors that are specific to, or of special importance for women. It also provides the groundwork to bridge feminist criminologists opposing views on scientific procedure and theory relevance. GST has the potential to tap into the conditions and events that hold specific significance for women while still enabling statistical evaluations of the patterns of behavior in large groups. Specifically, GST examines the significance of specific strains and links them with intersections of gender, social class, and race allowing researchers to investigate the ways in which these strains pressure some women to engage in criminal activities.

Despite all of its potential for exploring female crime, Agnew's theory has limitations that are a direct result of its recent development, ongoing revisions, generality, and its complexity. Agnew (2001) himself points out that with existing data, it is next to impossible to test the theory in its entirety; instead, for now, it must be tested in portions. Agnew (2001) asserts that the crime data collected thus far, leaves out important measures of emotional affect and tends to lack new measures of strain that are potentially important for

discovering group differences. Moreover, elements of bonding and learning that provide important statistical controls are also sometimes missing from research efforts. In short, until new data that is specifically designed to measure all of the General Strain theory constructs is collected, strain theory will ultimately remain untested.

The current work is crucially important because it explores the cumulative effects of strain on women from different racial and ethnic backgrounds. The strains used in the cumulative measure are critical to women, exploring the criminogenic effects of a narrow list of key strains that places the focus of the analysis on women as a group.

In the next chapter, the intricacies of Agnew's General Strain theory are introduced. First, its advantages over a macro strain theory are explained and how those advantages are especially relevant for studies of women. Next, Agnew's General Strain theory is presented to the reader with special attention to the many components that make strain theory so complex and difficult to test. The chapter goes on to discuss past research devoted to strain theory, and then shifts focus to how the theory relates to women and the specific concerns of strain to women as a group. Finally, the chapter will address how the sociology of mental health, specifically, the

research concerning gender and distress are helpful to understand strain theory in the context of criminology and how mental health research might be used to assist researchers. Next, Chapter 3 will introduce the dataset for the current study, and outline the steps of measurement development. Then, the drawbacks of using a secondary dataset are presented in addition to the limitations of the method of retrospective data collection that asked respondents to recall information for two separate five-year spans in a single two to three hour interview. Lastly, Chapter 3 will examine how the effects of strain can be distinguished from two other theories of crime that provide potentially similar outcomes for different reasons; social control and social learning theories.

Chapter 4 presents the analytical strategy, results of the analyses, and interposes several speculative arguments with respect to their meaning in addition to pointing out several connections between current findings and past research.

Chapter 5 concludes the piece by highlighting the critical findings, and by presenting their implications for furthering research on strain, women, and crime. Limitations of the research are presented, and a short section that addresses the need for more data collected specifically to test GST. Finally, implications for policy are addressed.

CHAPTER TWO

THEORETICAL OVERVIEW AND LITERATURE REVIEW

Agnew's General Strain Theory was developed in 1985 (revised in 1992 and 2001) to explain why some individuals engage in deviant behaviors while others do not. The types of deviant behavior that the theory attempts to explain includes illegal acts, heavy drinking, and drug abuse, (Agnew 1992), and has been extended to include bulimia (Broidy and Agnew 1997; Sharp et al. 2005) in addition to other types of behaviors that society considers destructive, maladjusted or socially deviant. In its most simplified form, General Strain Theory may be summarized by the statement "strain creates or facilitates negative emotions that in turn cause some people to commit deviant acts." As simple as it may sound, the theory is steeped with complexity. It is helpful to begin with this straightforward statement and then systematically add layers of theoretical complexity in an attempt to provide an accurate and thorough explanation of the theory.

In Agnew's original work, the term "Strain" refers to negative or adverse relations with others (Agnew, 1992 Pp 61). In a subsequent revision, however, Agnew further develops the strain concept to distinguish "objective strains" which refer

to any events or conditions that are disliked by most members of a given group (Agnew, 2001 Pp 320), from "subjective strains" which include events or conditions that are disliked by the individuals who are experiencing them. The concept of subjective strains is especially complex because people differ in how they evaluate certain events. For example, some individuals may view divorce as a negative event, while others may not. Thus, we might say that differences in emotional responses to strain are closely linked to subjective strain, or the way that an individual evaluates an event or condition (Agnew, 2001).

Because of the ambiguity of subjective strains, most strain research (including this work) attempts to use objective strains. For example, physical assault, or lack of food and water would fit the definition of objective strain. Agnew maintains however, that negative events and conditions as well as emotional responses to them can vary greatly according to group, and thus it is important to consider group characteristics such as gender and age when evaluating the effects of strain (Agnew, 2001 Pp 321).

The theory goes on to describe how certain strains have the potential to *pressure* us into reacting with deviant behaviors especially if we are unable or unwilling to adapt to these

pressures in other ways. The relationship of the pressures from strain with deviance is not absolute; instead, such factors as conventional social support and personal resources sometimes work to buffer the relationship by helping the individual to cope with negative situations in non-deviant ways. The theory suggests that individuals with higher levels of personal resources such as mastery and self-esteem are more likely to adapt to (cope with) strain in non-deviant ways. Moreover, when individuals have positive social support from conventional family and friends, in addition to community support resources, they are more able to deal with negative circumstances with positive adaptations.

It isn't, however just the characteristics of the individual and his/her resources, or social controls that predict criminal conduct; it is also the type of strain that predicts whether an individual engages in deviant activities (Agnew, 2001). The characteristics of the types of strain most likely to predict crime are those that are seen as unjust, perceived to be high in magnitude, associated with low social control, and those that create pressure to cope in a criminal manner rather than in a conventional manner (Agnew, 2001 Pp 326). Homelessness is one example of a specific strain that fits these characteristics.

Three Sources of Strain

General Strain Theory (GST) names three primary sources of strain: the failure to achieve positively valued goals, the loss of positively valued stimuli, and the presentation of negative stimuli (Agnew, 1992). The first, failure to achieve positively valued goals, although similar to the goal statement in Merton's (1938) theory, is in fact, very different. Merton's theory states that the source of strain that facilitates criminality is the disjunction between economic goal aspirations and expectations. Empirical tests of Merton's theory over the years have shown its weakness in its ability to link goal failure to crime (Kornhauser, 1978). Agnew explains that Merton's theory points to goal failure that is based on lofty dreams, while GST looks at the failure of goals as the disjunction between expectations that are reality based and the actual achievement of these goals. Agnew (1992) explains further that goal failure resulting in disjunction between expectations and actual achievements will have greatest impact if goal failure has both high and absolute relative importance for the specific individual. Moreover, he argues that goal failure that is related to crime is generally not associated with conventional socialization such as educational goals and occupational success (see

Elliott, Huizinga, and Ageton, 1985; Paternoster and Triplett, 1988). Conversely, for some individuals who view money as an extremely important goal, the inability to obtain money quickly is a type of goal failure that is easily achieved through crime (Agnew, 2001; Farnsworth and Lieber, 1989).

Agnew's theory points to a second source that leads to the failure to achieve positively valued goals. It involves the perception that the individual is not being treated in a manner he or she perceives as fair or just (Broidy, Agnew 1997). Serious distress is likely to occur when disjunction occurs between fair and just outcomes and actual outcomes. An individual could perceive that they are being treated unjustly in many different types of situations and relationships that evolve from circumstances arising in both public and private spheres. For instance, negative relations that arise from unfair treatment might involve interactions with intimates, family, friends, co-workers, supervisors, or even in relatively impersonal interactions with others who are not personally known to the individual such as restaurant personnel or shop owners. Broidy and Agnew (1997) suggest that these two sub-types of goal strain may hold special significance for women as a group, and will be discussed later in detail.

In sum, while Merton's traditional strain theory centers on the goals of achieving middle class status, tests of Merton's classic strain theory show that delinquency is not associated with failure to achieve educational and occupational goals (Agnew 1995; Agnew 2001; Elliott et al. 1985; Kornhauser 1978; Paternoster and Triplett 1988). GST is superior to classic strain theory for studying differences by group membership because it is able to allow for greater variation in the sources (e.g. goals and unjust treatment) and reactions to strain according to gender, race, and class differences (Broidy & Agnew, 1997; Broidy, 2001; Belknap & Holsinger, 2006). This distinction is important for gender research because men and women may be differentially affected by various strains. A testament to this point appears in stress process research, which shows that men are more likely to report that they are negatively affected by financial strain and women are more likely to report they are negatively affected by strains that stem from interpersonal relationships with friends and family.

The second primary type of strain proposed in Agnew's General Strain Theory is the loss of positively valued stimuli. Many examples of these losses are listed in life

event inventories found in the stress process literature¹ (see Turner and Wheaton, 1995), but some general examples might include the death of a loved one or pet, getting divorced or separated, moving away from friends and family, changing schools, or getting fired from a job. Because women are more likely to report being negatively affected by problems with interpersonal relationships, this type of strain may be particularly important for women.

The final type of strain involves the presentation of negative stimuli. This type of strain can involve types of emotional, physical, or sexual victimization, adverse work circumstances such as discrimination in the job market, low wages, low job autonomy, and negative experiences involving peers or family members. Overall, presentation of negative stimuli is represented by a very wide range of stressful life events; these could even include environmental conditions such as excessive noise or heat.

Agnew (1992) points to sociology's stress process research to guide criminologists toward identifying lists of relevant strains. Furthermore, he advocates the use of life event inventories as an important resource for understanding strain.

¹ The issues involving life event scales are very complex. A history of life event scales may be found in Cohen, Kessler, and Gordon (1995). Discussion of measurement issues and a list of life event scales for specific populations may be found in Turner and Wheaton (1995).

Agnew cautions that in the process of developing strain inventories for crime research that criminologists be mindful of important group differences in the types of strains encountered and their effects (Agnew, 1992).

GST: Anger and the Impact of Negative Emotions

General Strain Theory goes on to explain that a deviant response is not directly attributable to the negative experiences (strains); rather it is believed to be a reaction to a negative affective state resulting from the strains. "Negative affective states" are conditions that are connected with emotions such as sadness, fear, anger, frustration and disappointment and they can have a great effect on how we choose to adapt to strain. Each type of strain that an individual experiences potentially increases the range of negative emotions experienced. However, according to strain theory, anger is the primary emotion in the relationship between strain and deviant outcomes (Agnew, 1992).

Anger may lead to the loss of inhibitions and create a need for retaliatory action that is seemingly justified in order to alleviate the pressures resulting from the strain (see Katz, 1988 on humiliation). Anger also impedes an individual's capacity to think clearly, consequently reducing the ability

to engage in the cost and benefit analysis (see Clarke & Cornish, 1985) necessary to engage in legitimate coping rather than resorting to criminal behavior. (Agnew, 2001).

Anger has been linked to both mental health conditions and physical health problems and is considered to be an emotion that is physically, emotionally, and socially destructive to the individual who experiences it (Turner et al 2007; Aseltine et al. 2000). There are two types of anger, "state" anger, is said to be anger that is triggered by a particular situation, then dissipates quickly, while "trait" based anger is a chronic type of anger in which the individual has a tendency to be angry much of the time.

Negative emotions other than anger, such as frustration and sadness have received much less attention from researchers who study strain theory. This may be due to Agnew's (1992; 2001) statements regarding the extreme importance of anger compared with other emotions. Previous research involving emotions other than anger and inconsistencies related to findings will be discussed later.

Adaptations to Strain

The value of General Strain Theory is in whether it can explain the selection of deviant versus non-deviant

adaptations to strain. There are three different ways in which individuals may adapt to strain. The first is cognitively, this might include thinking through the problem and coming to accept it; minimizing the problem; pretending the problem didn't happen; or just thinking about it in such a way that allows one to feel a sense of being able to let it go (cognitive coping, avoidance, minimizing, denial).

Another way one might adapt to the pressures of strain is with a behavioral adaptation. This could include criminal behaviors in which the individual strikes out in a vengeful fashion, acts out in ways to let off steam or frustration, or through other actions that seem to right whatever way they feel they were wronged. The behaviors themselves might be totally unrelated to the specific strain they experienced, but the temporal proximity between the strain and the criminal coping is usually fairly close.

The third and final type of adaptation to strain is an emotional response that is described in terms of the type of escapism or retreatism (Merton, 1938) that one might seek through drug and alcohol abuse. Although strain theory names drug use as a response to strain, a review of the literature suggests that it is still unclear whether drug abuse is a response to strain or if drug use leads to increased levels of

strain (Boardman et al. 2001). There is some evidence that drug and alcohol use leads to increased levels of strain and not the reverse (Ginsberg & Greenley, 1978) and other research reports weak or insignificant effects of strain on drug use (Hansell & White, 1991; Cooper, Russell & Frone, 1990). Another possible explanation might include that drug and alcohol use is a type of strain and not an adaptation.

The Cumulative Impact of Strain

The effects of strain are believed to be the greatest when they are many, when they are large in magnitude, and when they are chronic. That is to say, the effects of negative events on deviance are believed to be cumulative; the more negative things that happen to an individual, the more likely an individual will engage in criminal behaviors. The more things that occur that are greatly traumatic to the individual, will also have more effect, as will those strains that tend to last for prolonged periods. Examples of chronic strain might include a chronic health issue, or a long period of unemployment; one of great magnitude or trauma might include the death of a spouse or child.

The cumulative impact of stressors is described in the stress process literature and can reasonably be extended to

strain theory. Stress process research measures stress on a simple sum composite scale however, it is not altogether clear the way in which the cumulative effects of stressful events work. Researchers believe that stressful events may have either an additive or interactive effect on deviance, or both. It could be that an individual who experiences a negative event and then another shortly afterward may have a greater reaction than an individual who experiences events with substantial amounts of time between them. It also may be that an individual might react to the simple sum of each negative event without regard to timing or other factors, or it could even be that some events by nature have more impact than do others (Agnew, 1992). Life course perspective suggests that stress exposure accumulates over our lifetimes, and that the clustering and timing of events are likely to influence cumulative impact (Wheaton, 1994). The most important thing to understand in the measurement of cumulative stress is that there does not seem to be a threshold or certain point at which negative events begin to affect an individual; all negative events seem to have some effect.

Criminologists have yet to produce a comprehensive list of strains to use for GST research. Much of the past work assumed that certain strains were unpleasant to everyone,

regardless of gender or race. Without examining a full range of stressors, and ones that have special meaning to specific groups, the effects of strain will continue to be underestimated (Agnew, 2001; Turner, Wheaton & Lloyd 1995; Turner et al 2003).

LITERATURE REVIEW OF GST RESEARCH

The hypotheses proposed by Agnew have been rigorously tested over the past two decades. In most cases, findings confirm that strain is positively associated with delinquency but, studies involving drug use, negative emotional affect, and personal/social resources have brought about varying levels of support for the theory. Agnew and White (1992) were the first to provide an empirical test of General Strain theory. In cross-sectional models, their research showed that measures of strain were related to both drug-use and delinquency, but in longitudinal models, strain was related only to delinquency, and not to drug use. In a subsequent review of these findings, Mazerolle et al. (2000) speculated that the inconsistency in Agnew and White's drug-use results was an example of attenuation than can occur from memory decay since there were three years between waves of data. Hoffman and Miller (1998) also looked at the baseline relationship

between strain and delinquency and found some support for the impact of strain on changes in delinquency in a three wave longitudinal study. Even though the basic relationship between strain and delinquency was apparent, they were unable to find support for differences in delinquency according to groups characterized by levels of self-efficacy, self-esteem, or deviant peer exposure. In a similar vein, Paternoster and Mazerolle (1994) tested the effects of exposure to strain on delinquency controlling for previous delinquent acts and found a positive relationship. Moreover, their findings provided some limited support for the idea that strain weakens social bonds thereby increasing involvement with deviant peers.

After general confirmation that strain is related to deviant behavior, researchers then turned their attention toward testing the effects of anger and "emotions other than anger" as mediating mechanisms (Aseltine, Gore & Gordon, 2000; Brezina 1996, 1998; Capowich, Mazerolle & Piquero, 2001; Mazerolle, Burton, Cullen, Evans, & Payne, 2000; Mazerolle & Piquero, 1997, 1998; Piquero & Sealock, 2000). Research on the mediating effect of anger in strain theory models has met with varying levels of success but the majority of the research gives at least some level of support to the anger

relationship. The research on the mediating effect of emotions other than anger has met with far less success.

In the first GST study that was able to connect the "coping" effect of deviance with emotion, Brezina (1996) found support for the hypothesis that strain does indeed increase one's level of negative affect. Specifically, Brezina showed that strain increased feelings of anger, resentment, anxiety, and depression. Moreover, he showed that the effects of strain on emotional affect are the greatest when levels of delinquency are low, indicating that delinquency is a coping or adaptive behavior to the pressures of strain.

Other research (Aseltine, Gore & Gordon, 2000; Mazerolle & Piquero, 1998) concluded that only violent or aggressive acts were related to strain through anger, and that general delinquency and so-called "retreatist" behaviors like drug use were not. Piquero and Sealock (2000), using just one type of strain in a population of offending youth found no relationship between depression and violence or property crime, and no relationship between anger and property crime, but found a significant relationship between anger and violent crime.

Thus, the idea that type of crime may be the key to unlocking the strain anger relationship was unleashed, but

other research showed that the relationships could not be consistently supported. With cross-sectional data, Mazerolle, Burton, Cullen, Evans, & Payne (2000) used a sample of high school students to test the mediating effects of anger on violence, school related deviance, and drug use. Results of OLS regression models provided no evidence that anger mediated any of the relationships between strain and the different criminal outcomes. In the relationship involving violence, anger was determined to be important, but strain, not anger mediated the relationship suggesting that angry youth may selectively experience strain that in turn leads to violence. Direct effects of strain on drug use and school deviance were also found, but the relationships were conditional on social control and peer influences.

Later, others toyed with the idea that specific types of strain may elicit different criminal acts. Baron (2004) tested a sample of homeless youth to determine whether various types of strain had effects on different types of crime and on total crime. He found that the negative stimuli strain "physical abuse" was related to total crime, while other strains were related to specific offenses. He also found that anger was not related to all types of strain, nevertheless, anger was a strong predictor of total crime, not just violent

crime as some prior research had indicated (see Aseltine et al. 2000; Mazerolle and Piquero 1997; Mazerolle et al. 2003).

STRAIN THEORY AND WOMEN: BROIDY AND AGNEW'S EXTENSION

In a theoretical piece, Broidy and Agnew (1997) present tentative hypotheses to explain the causes of female crime and the reasons for differences in male and female rates of crime. With respect to the three sources of strain and their potential to affect women specifically, Broidy and Agnew (1997) argue that the types of strain believed to be the most important for women can be described according to the three sources of strain.

As stated earlier, the first source, failure to achieve positively valued goals, can come in the form of disjunction between expectations and achievement, or from being treated in a manner that is perceived as unfair or unjust. Most notably, disjunction strains may occur due to failure to achieve financial security, which in recent years has become increasingly more important for women (Heimer, Wittrock & Unal, 2006; Steffensmeier, 1993; Steffensmeier et al, 1996); and in the failure to obtain interpersonal expectations such as achieving and maintaining close personal ties with others. Un-fair/un-just treatment can originate from a variety of

different sources: the family, intimate partners, employers, co-workers, or even strangers. Specific examples might include receiving less pay for equal work, having a spouse who is not willing to share household duties, perceptions of substandard treatment in public settings, to name a few.

The second source of strain is the loss of positively valued stimuli. In general, this refers to the loss of positive ties to others. Specifically, this might be experienced through the loss of a family member or friend due to death or relocation, the loss of an intimate partner or spouse through divorce or separation. For women, the loss of a child is potentially very important, especially in offender populations where women are frequently the sole caretakers of children (Steffensmeier and Allan, 1996). One can speculate that losing a child might occur for many different reasons: the state may remove a child from the home for reasons of neglect, abuse, parental drug use, or even parental arrest. Custody may be lost in situations of divorce. A child may tragically die in an accident or from disease, or may simply grow up and leave the nest. The loss of a child due to any circumstance has potential to be devastating for women and may create a situation of severe emotional turmoil.

The third source of strain is presentation of negative stimuli. For women, this important source of strain can occur in the form of sexual, emotional, or physical abuse. Although in general, women are less likely than men to be the victims of crime, they are more likely than men to be the victims of intimate partner violence (Heimer, Wittrock & Unal, 2006). There is some evidence that partnering with men may offer some form of protection for conventional women, but that partnership offers little for marginalized women (Dugan & Castro, 2006). Even so, among women, there is a lot of diversity in the types and degree of victimization experienced both within one relationship and across relationships (Kruttschmitt & MacMillan, 2006).

Negative stimuli might also be found in the form of role strain where women are expected to manage a household, hold a job, and be the caretaker/nurturer. Sexual harassment and discrimination in the workplace and the degradation associated with pink-collar employment may also be sources of negative stimuli (Broidy & Agnew, 1997).

More generally, women are presented with social barriers that result in losses of valued aspects of their lives. Broidy and Agnew suggest that women may not always be able to behave or even communicate as they wish because of social

barriers relating to perceptions of appropriate communication, appearance, and emotional expression. As they age, women are pressured into adopting feminine roles that may eliminate parts of their lives they once found important. Behaviors they may have enjoyed when they were younger are abandoned or de-emphasized. Participation in sports and socializing in a bar are two examples. Women who feel that they are restricted from activities they may consider important, feel constricted by social roles and as a result, may feel a sense of loss. Broidy and Agnew (1997) claim women who experience this type of strain may be more likely to engage in self-destructive behaviors and crimes such as low-level theft.

These are just a few broad examples of the possible strains that may affect women; many others are yet to be discovered and tested (Broidy, & Agnew, 1997). It is important to note that these adverse events and conditions do not affect all women equally. There are factors that condition the reaction to strain such as individual differences in disposition, social support, and opportunity to engage in crime (Broidy & Agnew, 1997). Yet overall, given conditioning factors, Broidy and Agnew (1997) hypothesize that women who have the highest number of "negative stimuli strains" such as physical abuse, emotional abuse, verbal abuse, harassment etc., will engage in

the greatest amount of offending. There is some evidence that low-income minority women are more likely to suffer from greater numbers of negative stimuli strains than are their higher-income non-minority counterparts (Chesney-Lind and Shelden, 1992).

Broidy and Agnew further argue that women will respond to strain with crime when non-deviant coping is ineffective or unavailable, meaning that positive cognitive and emotional forms of adaptation are not being used. Women also are more likely to turn to crime when they have opportunities to engage in criminal acts and when social controls are low. Lastly, they propose that crime is more likely to occur when women are predisposed to criminality, meaning that their belief system allows for these behaviors, and their associates share the same beliefs.

Women and Exposure to Strain

There is some evidence that women are exposed to more stressors (strains) and are more greatly affected by those stressors (strains) than are men. Other evidence indicates that the levels of stress among women and men are equal. One reason there is not yet a definitive answer is that often times stress literature has excluded stressors that may be of

particular importance to females as a group. While no list of stressors for men or women can be comprehensive, it might be important to include sexual abuse, abortion, gender discrimination, problems involving child-care and nurturing that are especially important factors that contribute to stress among women in particular (Aneshensel and Pearlin 1987; Makosky 1980; Broidy and Agnew 1997).

Women and Negative Affective States

To review, strain causes women (and men) to experience negative emotions such as anger, frustration, and sadness (Agnew, 2001). When individuals are unable to cope with these emotions, especially anger, via non-deviant positive adaptations, then crime may occur.

Although both men and women may react to strain with anger, anger experienced by women may be accompanied by other emotions such as feelings of guilt, anxiety, depression, and shame (Agnew & Broidy, 1997; Broidy, 2001). Some hypothesize that these additional emotions may lead women into types of deviant behaviors that are directed toward the self, such as substance abuse, eating disorders, or to criminal behaviors that do not involve personal aggression toward others such as shoplifting or fraud (Agnew 2001; Broidy & Agnew 1997). Some

research even shows an inverse relationship between "emotions other than anger" and delinquency (Broidy, 2001) and between depressive symptoms and deviance (Sharp et al, 2005).

The reasons used to explain gender differences in deviant behavior are sometimes attributed to the idea that women are more likely to direct their emotions inward (internalization) and men direct theirs outward (externalization). This may be part of the reason that women engage in less criminal behavior than men, however, externalization and internalization may not wholly explain differences in behaviors since there is a positive correlation between depression (internalizing) and crime (externalizing) (Mirowsky & Ross, 2003; Sharp et al. 2005). This will be discussed further in the section involving stress process research.

There is also emerging support for the idea that men may be more likely to experience hostility while women are more likely to experience short-tempered anger (Turner et al. 2007). Hostility is consistent with externalizing behaviors that include acting out against others, while internalizing behaviors like depression, and anxiety may potentially be linked to short-tempered anger (Turner et al. 2007), and may be associated with deviance that does not involve personal aggression toward others. In line with this idea, Sharp et

al. (2005) suggest that for females there is a complex relationship of emotional responses and criminal behaviors. In a sample of young undergraduate students, female's reacted to strain with both anger and other negative emotional responses, but were overall significantly more likely than men to experience non-anger negative emotions such as withdrawing, feeling guilt or feeling depressed. When anger was reported among females, it was found to be associated with criminal behavior, while the other negative emotions were negatively associated with criminal behavior. Moreover, Sharp et al. (2005) found no evidence of a relationship between anger and eating disorders in the sample of young women suggesting that different combinations of emotional responses might lead to different types of deviance.

Evidence concerning gender differences in experiencing the emotion anger is inconsistent. Some studies suggest women experience anger more often than do men (Linden et al. 1997; Mirowsky and Ross 1995), while other research shows no gender difference. For both sexes however, research does show a systematic decrease in anger as we age (Schieman, 1999).

Women, Personal Resources, and Social Support

Broidy and Agnew (1997) hypothesize that although men and women both experience anger; women are less likely to *respond* to anger with crime. The presence of personal resources and social support are assumed to reduce the effects of strain on crime (Agnew, 2001). Females tend to have lower levels of personal resources such as self-esteem and mastery than do males, and these resources are believed to be inversely related with deviant behavior and crime. Again, as with depression and crime, this gender conundrum is counter-intuitive. If low self-esteem and low mastery are associated with higher levels of deviant behavior, one might expect that females would be responsible for most of the criminal activity. One explanation might be that for women, lower self-esteem and mastery are conducive to deviance such as drug and alcohol use (Broidy & Agnew, 1997) or purging behavior (Sharp, 2001) and not to serious crime or crime directed toward others.

Females report higher levels of social support than do males, and social support is believed to decrease the effects of strain (Rosenthal & Gesten, 1989; Stark et al. 1989), thus decreasing the likelihood of deviant behavior. On the other hand, Broidy and Agnew (1997) speculate that it is possible

that for women, social support could potentially increase strain since women place such great importance on their social relationships, and social relationships have the potential to fail.

Empirical findings of GST studies that were able to include measures of social support and personal resources are incomplete and inconclusive. Baron (2004) found among a sample of street youth, that higher levels of self-esteem were associated with more involvement in total crime; unfortunately, these results were not separated by gender. Sharp et al. (2001) looked at the effects of self-esteem, mastery, and social support on negative emotional responses using a sample of college students. The results of the study showed that for males and females, high self-esteem was associated with lower levels of anger and non-anger negative emotions. For males only, higher levels of mastery were associated with higher levels of anger, and only females benefited from social support.

Capowich et al. (2001) also looked at the effects of social support in a sample of students and found that perceived and immediate support did not predict intentions to fight or commit DUI, suggesting that support had limited value in insulating people from the effects of strain. Perceived

support did show some effect, however, on intentions to shoplift. Further evaluation stratifying low and high global social support suggested that when predicting intentions to fight, situational anger was statistically significant for both low and high support; however, the strain coefficient was not significant. For intentions to shoplift, strain was significant at high social support, but not low support. Intentions to drive under the influence showed no effect of situational anger strain at either high or low support. These analyses were not separated by gender.

Hoffman and Su (1997) tested gender differences in social support to see if they could explain the gender gap in crime. Social support did not condition reactions to strain, and therefore was not responsible for gender differences in crime. Additionally, they were unable to show important gender differences in the effects of stressful life events; they appeared to have similar impact on both males and females in producing delinquent and drug using behaviors.

Overall, results in support of the effects of personal resources and social support on crime and delinquency via strain theory have been sketchy and inconclusive at best.

LITERATURE REVIEW: STRAIN THEORY AND GENDER

Compared with the total number of GST studies, there are relatively few studies using General Strain Theory to investigate gender differences, and even fewer that only consider the effects of strain on populations of females. As Piquero and Sealock (Pp 131, 2004) point out, many of these gender studies haven't examined the emotional affective states proposed by Agnew, have not included the entire range of coping mechanisms (cognitive, emotional, behavioral), or have employed samples of college students that are not necessarily criminally active.

Much of the gender/GST-related research has failed to examine the kinds of negative emotional states that Agnew (1992) deems important for the study of criminal behavior. In addition, prior studies have not measured the full array of coping mechanisms, much less the presence of gender differences in the availability of such coping resources. Third, most of the previous studies that have examined gender/GST have used non-deviant samples (i.e., high school and college students), rather than providing evidence on criminally active samples. This limitation is important insofar as school-based samples use a captive audience and are likely to contain individuals with relatively stable home lives, at least much more stable than those found in a delinquent population.

A review of the literature shows that when considering the number and effects of negative life events (strains) that females and males do not necessarily differ. For example, Hoffman and Cerbone (1999) used a sample of adolescents to examine the effects of high numbers of negative life events on delinquency. The findings suggest that although higher

numbers of negative events experienced over time is related to increased delinquency, the relationship was no different for males than for females. Similarly, Hoffman and Su (1997) used structural equation modeling to determine whether there were gender differences in the number of stressful life events experienced that were associated with delinquency or substance use and found no difference existed.

However, other studies that have more closely considered the type of strain or the type of deviance have found that gender differences do exist. For instance, Agnew and Brezina (1997) tested gender differences in inter-personal strain related to delinquency and found a stronger relationship for males than for females. Moreover, using National Youth Survey data, Mazerolle (1998) found that GST predictors of delinquency did not differ across gender, but when crime-specific outcomes were examined, gender differences were determined to exist for violent crime, but not property crime. Specifically, exposure to various negative life events predicted violent delinquency in males, but not in females.

Several studies have placed more emphasis on negative affect and the buffering effects of personal resources and social support. For example, in a study involving purging behaviors of young women, Sharp et al. (2001) found that among

college females, purging was related to anger at high levels of depression. In other research, Sharp et al. (2005) found that controlling for level of anger, other negative emotions decreased the likelihood of criminality among women. This finding is in line with Broidy and Agnew's contention that internalization stifles crime among women and helps to explain the gender gap. This, however, is in stark contrast to Mirowsky and Ross (2003) who argue that deviant behavior is positively associated with depression. In addition to those findings, Sharp's (2004) study also showed that high self-esteem was associated with lower levels of anger and depression for males and females, but that social support was only important for decreasing negative emotion among females.

In a direct test of the gender difference portion of Broidy and Agnew's (1997) theoretical piece on GST, Piquero and Sealock (2004) considered the effects of anger and depression on aggression and property crimes using data from a sample of young people who were considered "chemically dependent." The results of their cross-sectional study present several interesting findings. They found that females experienced greater levels of both anger and depression than did males. They also found that anger was related to personal aggression for both males and females, that anger was related to property

crimes for males, but not for females, and that depression was unrelated to interpersonal aggression and property crimes for both sexes. Moreover, they found no evidence of a mediating effect of these emotions in the relationship between strain and the two outcome variables. They also found that for females, regardless of the significance of strain, that anger was positively associated with aggression. They hypothesized that this may have in fact been suggestive of the idea that females hang on to their anger for much longer than males, and the significant coefficient may have been suggestive of cumulative anger. More generally, their findings showed no statistically significant relationship between their measure of strain and either property or interpersonal aggression for females. It is possible that because their measure of strain only included one source (presentation of negative stimuli), and one type (physical and emotional abuse), and because the sample of females was very small (N=37), the effects of strain could not be captured for females.

Hay (2003) also attempted a direct test of Broidy and Agnew's (1997) explanations of the gender gap. Using reports from a sample of adolescents in a southwestern urban area, the study examined the effects of family strain on projected delinquency. Results demonstrated that when faced with

similar levels of family strains, males and females experienced similar levels of anger, but females experienced significantly more guilt than did males. Anger was shown to increase projected deviance while guilt was found to decrease it. Hay concluded that research involving other emotions beyond anger is necessary to discover more about gender differences in criminal behavior.

Broidy (2001) took a different approach and examined legitimate versus illegitimate coping strategies using a sample of undergraduate students. She hypothesized that negative emotions other than anger would be positively associated with legitimate coping, and anger would be associated with increased illegitimate coping. Instead, what she found was that negative emotions actually decreased illegitimate coping, and, as expected, anger increased illegitimate coping. When differences by gender were examined, she found that women were more likely to use legitimate coping strategies, and they were more likely to experience negative emotions, than were men.

In light of the above research, Broidy and Agnew's suggestions with regard to paying attention to group differences becomes even more salient. The relatively small amount of General Strain Theory research conducted with

samples of females makes it clear that more research is necessary to discover pertinent strains that may be important to specific groups, and to include a wider range of emotions. Moreover, research must determine how different groups cope with strain and to what extent these groups differ in their use of criminal behavior.

STRESS PROCESS AND LINKS TO GENERAL STRAIN THEORY

Because GST is linked to stress process research, it is helpful to provide a cursory review of the relevant stress process literature in order to gain a better understanding of the relationship between strain (stressors) and its complex relationship with gender. The factors that explain why people react differently to strain or "stressors" are being studied in sociology to predict mental health outcomes such as distress. The sociology of mental health literature has long recognized differences in the ways that men and women cope with life events; a body of literature distinguishes between men's reactions to stress and that of women. Moreover, stress process researchers have also investigated anti-social behavior as one of the ways individuals cope with stress.

As stated earlier, when evaluating gender differences in mental health outcomes, Stress Process researchers will

sometimes group reactions to stressors into categories of internalizing and externalizing disorders. Specifically, some research shows that women may have a tendency to react to stress with symptoms of depression, while men may tend to react with drug-abuse and antisocial behaviors (Rosenfield, 1999). There has been some speculation that women may feel more symptoms of depression and general distress than men do, possibly because men are able to transform their distress into anti-social behavior thus creating an outlet to reduce their levels of depression. Mirowsky and Ross (1995, 2003) do not agree with this explanation and argue that in order for this explanation to hold true, criminal, and anti-social behavior would have to be negatively associated with levels of distress, but that is not the case. On the contrary, studies show that increases in levels of distress are associated with increases in levels of anti-social behavior, alcoholism, and drug abuse (Dowrenwend et al 1980). In general, people who commit criminal offenses are more depressed than those who do not commit criminal offenses (Mirowsky & Ross 2003; Ross 2000). This association does not however, explain the gender gap in depressive symptoms, that is, it does not explain why men are not as depressed as women. Logically, one would expect that the positive association between deviance and

depression would dictate that women would be responsible for more crime than are men. One possible explanation for the disconnect in logic could be in the order of causation, that is, among men, depression may follow anti-social behavior, but among women depression may precede it. According to Mirowsky and Ross (2003), if women were to commit as much crime, drink as heavily and engage in as much drug use as do men, they would experience even more depressive symptoms than they already do (Mirowsky & Ross 2003).

The relationships between anti-social behavior, gender, and depression has implications for the current project because Agnew's General Strain theory hypothesizes that anger, not other negative emotions is the central mechanism that links strain to criminal offending (Agnew, 1992), and some research suggests that among women, anger is usually accompanied by other emotions such as guilt and depression. Some research even concludes that men and women experience similar levels of anger in response to strain, but that they do not experience similar levels of other negative emotions (Hay, 2003). Could this explain the lower levels of criminal activity among women when compared with men? Some researchers say yes; the gender gap between male and female offending may even be partially explained by women's internalizing reactions to strain (Broidy

& Agnew, 1997). However, the use of a simple explanation like internalization (depression/guilt etc.) versus externalization (anger, drinking, anti-social behavior) becomes muddy when one considers the evidence that law breaking and depression are positively related.

Furthermore, there is conflicting evidence with regard to whether males and females experience similar levels of anger. Some researchers suggest that males are more likely to respond to strain with anger, while women tend to respond with more self-deprecating emotions like depression. Other research indicates that males and females report experiencing similar levels of anger (Conger et al. 1993; Mirowsky and Ross 1995). Still other research indicates that for females, anger is accompanied by other negative emotions that may work to reduce the likelihood of criminal behavior (Ogle et al., 1995; Sharp et al. 2005).

According to GST, both men and women respond to strain with anger. Sharp et al. (2005), however, argues that women may internalize this anger increasing their likelihood to experience depression and that the combination of anger and depression among women influences the *types* of deviance they commit. It is possible that when women become angry they experience guilt and depression for feeling anger, since

societal norms are such that anger is not an acceptable reaction for women to express. Actual outward expressions of anger tend to be met with strong aversion. Therefore, women may be forced to internalize anger, leading to self-destructive forms of deviance such as drug and alcohol abuse or eating disorders. When men become angry, social customs dictate that they are allowed to express their anger. One possible outlet of this anger might be committing crime, including acts of violence or aggression. In support of this, Agnew and White (1992) found that anger leads to delinquency when levels of depression are low.

Negative life events (strain)

Undesirable events are defined as changes that put individuals into circumstances where they have fewer resources than they did before (Pearlin 1989). Decreases in resources that are especially important are losses in income, economic security, autonomy, social support, affection, household safety, physical health (Turner et al 1995). Undesirable events that decrease one's resources tend to increase levels of anxiety and depression; moreover, these losses accumulate over time creating feelings of failure that can in turn compound one's feelings of depression and anxiety. Therefore,

distress tends to increase with each additional negative event experienced. Some negative events tend to create greater levels of distress than do others; those events for which the individual feels he or she could have done something to change or avoid the event are much less distressing than those in which the individual feels as though there was nothing they could have done to control the outcome. This might be especially important in the current research when looking at populations of drug-addicted women who may find themselves in situations of losing custody of their children or becoming homeless. Such uncontrollable events leave people feeling as though they are victims of fate. Conversely, negative events that are perceived as potentially avoidable tend to leave people feeling as though they can make changes to their behavior or thinking that will allow them to better cope with a similar problem in the future.

Traumatic strain versus negative life events

A recent study (Turner et al, 2003) on the differences in stress exposure according to status reveals that when measuring the effects of different types of events on mental health outcomes, there are differences by gender and race depending upon how stress is measured. For instance, when

taking only recent life events (12 months) into account, stressors were determined to under-estimate the significance of social stress on mental health outcomes in a relatively young sample population. The study also found that traumatic events (Pp 498) and daily discrimination better predicted depression among women than did recent life events.

The findings from this study also showed that there was no difference among people of lower socioeconomic status in their responsiveness to stress regardless of how stress was measured. However, gender interaction effects showed that when looking at traumatic events, chronic stressors and daily discrimination, women were found to be more responsive than men were, while no gender difference was found for recent life events (12 months). Moreover, African Americans were found to be less affected by chronic stress than whites. Total stress measures did not show any difference in stress responsiveness according to socioeconomic status or race. Total stress measures did however, show statistically significant evidence that women were more responsive to the total comprehensive social stress measure than were men.

In sum, the Turner study showed that when only recent life events are considered, women experience more social stress than do men. However, the findings also indicate that recent

events may not be as crucial for examining the effects of, or responses to stressors for women as are other stress measures. It is quite possible that trauma, and discrimination types of strain can provide better predictions for determining health outcomes for women as a group. Therefore, findings from this study provide some support in favor of the use of a cumulative strain or "total" strain measure and the use of strains that are considered "lifetime major events." In other words, traumatic as well as discrimination strain should both be included when determining mental health outcomes in women. Although the Turner findings predict depression, it seems acceptable that the same logic may be extended to the examination of the relationship between Agnew's strains and anti-social or criminal acts.

WHY DO SOME WOMEN COMMIT CRIME?

Reviews of the stress process and criminology literature illustrate that we cannot be entirely sure if men and women experience the same levels of strain. Some research shows they experience the same levels, other research suggests that women experience more. Also, there is not a clear understanding of the relationship of anger and other emotions to crime, or how these might differ according to gender.

However, we can be quite confident that certain specific strains exist that are exclusive to living life as a woman, are far more common among women, or at least may have special significance for living life as a female and that these have not yet been addressed adequately.

These strains should be examined using a sample of females to determine whether they are able to predict negative emotional affect and criminal outcomes. This is potentially important because gender differences in crime outcomes may result from differences in types of strains experienced and from differences in emotions that result from these strains, while gender differences in *levels* of strain, emotions, and personal resources may not be as important (Broidy & Agnew, 1997; Broidy, 2001).

It is possible that women have a tendency to internalize rather than externalize their responses to negative events, when the strains being experienced are those ones that are commonly shared with men. In other words, those strains that are common to all humans, or those that hold meaning that is similar to that of the male experience may produce internalizing effects and self-destructive coping mechanisms like eating disorders and drug abuse. Conversely, strains

that are female specific may cause external or criminogenic effects.

The question then becomes what factors are necessary to create criminal outcomes among women when in the general population of women the odds of crime occurring are so small? It is possible that women would be more likely to externalize their response to strain when the negative events they experience are central or exclusive to their existence as women. It could be that female specific strain has greater impact than other strains because of women's status in society, and this may be especially true for a high-risk population. That is to say that marginalized women may feel that they are more victimized, have less personal resources, are less able to help themselves, less able to overcome the problems with which they are faced because of the institutional barriers imbedded in our societal structure. It is possible that as strains specific to women's lives accumulate, especially over relatively short periods of time, they may work to propel women into deviant acts, acts that are not consistent with their passive social conditioning (see Hagan et al. 1985).

This study proposes that certain strains that are either solely experienced by women, or that have specific meaning to

them by nature of their place in society, may cause some women to move from internalizing behaviors like drug and alcohol abuse to more outwardly projected external behaviors like aggression, stealing, and other types of illegal acts.

Strains that are specific to women or have special meaning for them are varied and many, but those that will be examined in this study may be of particular importance, especially given the sample composition, which will be discussed in depth in the following chapter.

STRAINS CENTRAL TO THE LIVES OF WOMEN

Abuse

Women are much more likely than are men, to have been victims of physical and sexual abuse at some time in their lives (Heimer, Wittrock & Unal, 2006). When comparing female and male offenders from a New Haven felony court, Daly (1994) found that women reported greater exposure to abuse than did the men, and that the abuse was usually perpetrated by men. This indicates that, when marginalized women become involved in relationships with men, especially intimate relationships, (Heimer, Wittrock & Unal, 2006); there is an increased possibility that they will become victims of abuse. Moreover, the women who become involved in these abusive relationships

often find it difficult to leave them (Hoff 1990; Kirkwood 1993; Ussher 1998). The strain of staying in such a relationship is chronic. There may be a constant concern for ones own survival and for the safety of children and pets. Equally stressful is the decision to leave the abusive environment for fear of possible retribution from the abuser, increased economic difficulties, or the potential of becoming homeless. Additional strains from abuse can stem from financial sources, leaving a familiar location, and from the reactions of friends, and family.

Health Concerns

Certain physical health problems are of special concern for women. Miscarriage, hysterectomy, abortion, toxemia, and breast cancer are just a few of the health issues that many women must face. These health issues are especially problematic for drug-addicted, marginalized, and lower-income women who do not have health insurance. Free clinics, where available, are able to treat some women, but the reality is that low-cost medical help is not always available so many women go un-diagnosed and un-treated. Female related health problems, and the financial burdens associated with them can be a major source of strain for women, not only because of the

financial burdens associated with a health crisis, but also because women tend to be the nurturers of the family; they are expected to be the caretakers, not the ones in need of care.

Homelessness

Agnew (2001) argues that homelessness is a type of strain that is strongly related to crime because it affects the individual at many different levels. The person may see their predicament as unfair or unjust, they are losing what may have been a positively valued stimuli (their home), and as a result of that loss they are likely to be presented with negative stimulus in the form of vulnerability to victimization and conflicts. Although much of the time homelessness involves the loss of positively valued stimuli, some research shows that homelessness, especially among youths, can be the result of parental abuse (Simons and Whitbeck, 1991; Davis, 1999). Similarly, women may also experience homelessness because of spousal abuse. Whether the loss is that of a positive environment, or the escape from a negative one, when an individual becomes homeless, the potential for the exposure to negative stimuli is greatly increased (McCarthy and Hagan, 1992). In general, homelessness is associated with low levels of social control and exposure to unconventional individuals

that tends to increase opportunity for social learning of criminal behaviors (Whitbeck and Simons, 1993). For all of these reasons, Agnew argues that homelessness is likely to present a strong positive association with crime.

Women may be especially vulnerable to the effects of the strain of homelessness. Because of their lower physical strength compared with males, they may become targets for victimization by other homeless individuals. Women may also find it more difficult to survive on the street than their male counter-parts because they are less likely to be hired for one-day odd jobs since the majority of legitimate cash jobs involve physical labor such as construction work.

Children

The chief social characteristic that distinguishes male from female offenders is that women are more often the caretakers of dependent children (Steffensmeier et al., 1996). As such, one might argue that this difference provides a potential source of strain exclusive to a woman's role as a parent. The consequences of severe strains induced by child-care burdens could elicit criminal adaptations, which might explain why marginalized women engage in criminal behavior while the majority of women do not.

Conversely, General Strain Theory contends that it is more likely that burdens associated with the care of conventional others, especially those to whom one has a strong attachment, holds a weak relationship with criminal conduct (Agnew, 2001). Agnew (2001) argues that most care-burden strains have a tendency to be associated with higher levels of social control resulting in lower opportunities for crime. Agnew concedes, however, that some types of offending such as drug use, shoplifting, child-neglect, and family violence may be associated with care-burden strains, but overall that, care-burden strain are less likely than some other types of strain to create criminal adaptations.

Thus, according to Broidy and Agnew (1997), women are more likely to be confronted with the care-burden type of strain than are men because they are often the caretakers of children. But, according to their view, caring for others does not appear to create pressure or incentive to commit crime, and instead may influence opportunity and social control in such a way that may help explain the crime gender gap. This line of thinking might lead one to conclude that women who are without children would be more likely to commit crime than women who have children, but when one examines the

female prison population, we see that a typical incarcerated woman is a poor, uneducated, single mother (Covington, 1998).

Some research suggests that the motivation to be a more effective and loving parent is a common theme in narratives of women offenders who are trying to become less criminally active. However, the role of children as an influence toward conventionalization is complex and often the verbalization of wanting to be a better parent is not realized through a reduction in criminal offending. Giordano, Deines, and Cernkovich (2006) found in their study that despite verbalized intentions, more than fifty percent of women with extensive criminal backgrounds did not have physical custody of at least one of their minor children for reasons of child-endangerment.

Research concerning the relationship between parenthood and distress (or depression) is inconsistent, and thus adds even more complexity to the relationship between strain, negative emotions, and crime. Some research indicates that parents and non-parents do not differ significantly in their levels of emotional well-being (Ross et al. 1990; Umberson and Gove, 1989; Aneshensel et al. 1981), while other research suggests that parents are significantly more distressed than people who have never had children (Glenn and McLanahan, 1981; Evenson and Simon, 2005).

When gender is also considered in the parenting and mental health relationship, one study finds that the association between parenthood and emotional well-being does not differ significantly between men and women (Evenson and Simon, 2005). However, when single and married parents are compared, single parents report more depressive symptoms than married parents (Evenson and Simon, 2005). This is pertinent because certain types of parenting are associated with being male, while other types are associated with being female. For instance, mothers are more likely to reside with their young biological and/or adopted children in cases of children born out of wedlock, divorce, separation, cohabiting, and remarriage (Evenson & Simon 2005). This finding is contrary to research suggesting that irrespective of marital status, parenthood in general has greater emotional consequences for women than for men (Cunningham and Knoester, 2007).

In sum, variations in mental health statuses of parents and the childless are related to many different factors. The relationships involving losses of child custody with depression and crime has yet to be evaluated.

Specific hypotheses and the purpose of this paper

Based on Agnew's General Strain theory, this study proposes several hypotheses to test the ability of cumulative strain, specifically strains that hold special significance for living life as a female, to predict criminal outcomes. First, the greater the number of strains experienced, the greater the likelihood that women will engage in criminality, net of previous criminal conduct, concurrent substance abuse behavior and social control. Second, there will be an indirect effect of cumulative strain on crime through anger. Third, there will be an indirect effect of cumulative strain on crime through other negative affect. In addition to these three hypotheses, interactions of negative emotions and job stability with race and ethnicity will be examined to address research indicating higher levels of depression and affective disorders among white women (Kessler et al. 1994) and to address the possibilities of discrimination or structural factors (Hill and Crawford 1990) that might influence job stability.

1. Greater amounts of strain experienced will increase the likelihood that women will engage in criminal behavior.
2. Anger mediates the effect of strain on criminal behavior.
3. Negative emotions (other than anger), mediates the effect of strain on criminal behavior.

These three hypotheses provide empirical tests that will potentially solidify the argument that General Strain Theory is not only adequate, but a necessary tool for the study of crime among mature, adult women.

More generally, this study attempts to fill gaps and to make several contributions to the literature. First, the bulk of criminological research focuses on men or uses gender as a control variable. This study will examine the activities and experiences of women. It will focus on risk factors and circumstances that have special relevance to females. Thus, interpretations of the analyses will be viewed through a criminology framework, but with an eye toward potentially distinct effects for a high-risk female population, rather than a male-female comparison. Second, studies thus far have attempted to understand female crime in a way that explains its existence through anomalies in anger and other negative emotions or through diluted deviant outcomes like shoplifting and eating disorders. This type of strategy seems to assume that female crime is somehow a different phenomenon than male crime and ignores or avoids explanations of why women sometimes commit serious crimes, despite the lower likelihood of it occurring. This study is in response to the persistent

presupposition that women's crime is somehow different and less dangerous than men's crime. This study will attempt to reunite criminal outcomes by simply looking at illegal acts. As no other study previously has done, this study will attempt to use GST as a general theory of crime² (see Gottfredson and Hirschi, 1990) while focusing on strains that are specific to living life as a female, or that have special relevance for females. Instead of looking for reasons why women commit less crime and less serious crime, this study will look at the female specific strains related to all crime.

Third, much of the strain literature is focused on samples of adolescents and college students; less is known about the behaviors of adults. This study uses a sample of female adult addicts and alcoholics aged 28-47, thereby extending the scope of criminological research beyond that of the low-risk, youthful offender. Fourth, this study will take a cursory look at the relationship of negative affective states to the commissions of a wide array of illegal acts. As indicated earlier, the Criminological literature has just begun to examine emotional affect in relation to criminal outcomes, yet very little has been done to examine theorized relationships

² In this case, the use of Gottfredson and Hirschi's general theory of crime has less to do with suggesting anything about level of self-control, instead it builds on the idea that crime is defined as any illegal act, and that the categorization of different crimes by type is not necessary.

between women's offenses and negative emotional affective states. Finally, this study will not focus on anger as if it relates exclusively to violent crime. Instead, this study seeks to employ the generality of criminality (see Gottfredson and Hirschi, 1990) using strain theory by identifying female specific factors that produce twelve different types of illegal acts (see Appendix B). These include, auto theft, public disorder, prostitution, fraud/forgery, larceny, burglary, assault, arson, assault with a weapon, rape, murder, and parole violations.

CHAPTER THREE

DATA & METHODOLOGY

Data for this study are from the Services Research Outcomes Study (SROS) conducted in 1995 and 1996 by the U.S. Department of Health and Human Services, the Mental Health Administration, and the Office of Applied Studies. The original purpose of the SROS was to investigate substance abuse treatment facilities, and the treatment outcomes of the clients.

Data were obtained from a national sample of the population that was discharged from drug treatment between September 1, 1989 and August 31, 1990, and represents a ten-year retrospective of the clients' lives. Information was gathered from ninety-nine (99) treatment facilities, and from personal interviews with a sample of the clients who received treatment from those facilities. The ninety-nine facilities were part of the sample from a previous study, the Drug Services Research Study (DSRS), conducted by the National Institute on Drug Abuse. The DSRS facility sample was taken from a list of all known substance abuse treatment facilities (N = 10,649 individuals). The DSRS study was a two-phase client and

facility study that ultimately abstracted 2,222 client records from one-hundred twenty (120) facilities.

For the Services Research Outcomes Study (SROS) sample, researchers re-contacted all 120 DSRS facilities, 99 of whom agreed to participate in the study. The result was a five year follow-up involving the original client sample from the DSRS (N = 1,706), and an additional sample of 1,341 clients added for SROS purposes, for a total sample of 3,047 clients who had been discharged from 99 drug treatment facilities.

Data for the SROS study were drawn from three separate sources. Part 1 was obtained through interviews with directors from the ninety-nine facilities. Facility directors were interviewed on topics such as staff, revenue, charges, hours, compensation, and program costs.

Part 2 is comprised of treatment record abstractions from 3,047 clients. The abstracted records data provide information on demographic characteristics, criminal justice involvement, medical conditions, drug use history, urine test results, drug treatment history, discharge, and billing information.

Part 3 was collected in client interviews that took place during a nine-month field period in 1995/1996. Of 3,047 clients for whom data were abstracted from facility records,

eighty-two percent (82%) were located for interviews. Of those, interviews were conducted with nearly 60 percent (N=1,799) of clients. Eighteen percent (18%) of the clients in the sample could not be located during the time allotted for data collection. Nine percent (9%) of clients were known to have died before the interview period, and another one percent (1%) was determined to be ineligible for the interview.

The client interviews focused on the behavior and life circumstances of the subjects during the five years before entering into treatment, and five years after treatment. In most cases, identical questions were asked for each of the two periods, with some additional questions relating to the treatment period, the several months leading up to the interview, and childhood experiences. The survey instrument inquired about patterns of drug and alcohol use, criminal activity, employment, mental/physical health, and lifestyle characteristics. To aid recall, calendars were used to record dates and events that were important to the client. The clients were then asked to refer to these reference periods when responding to the survey questions.

The analysis for this paper uses a sub-sample of the original SROS dataset. Three-hundred ninety six (396) of the

original five-hundred forty-eight (548) female subjects are included in the analysis. The sample represents women who were discharged in 1990 from 82 different substance abuse treatment facilities across the United States.

Because one of the main variables in the study relates to custody of children, it seemed prudent to exclude women who, at the beginning of the five-year period, were very young, or very old, and not likely to have children in their care. Other variables relating to age that limited inclusion into the sample subset were marital status and full-time employment stability. The final subset represents women between the ages of twenty-eight and forty-seven years old at the time of the interview, making them between eighteen and thirty-seven at the beginning of the study reference period.

Through listwise deletion of missing data, the sample for the main models in the analysis included (N = 355) respondents after treatment and (N = 360) respondents before treatment. Missing data were rigorously scrutinized and it was concluded that instrument, interviewer, or coder error was responsible for the two variables with the largest amounts of missing data. Specifically, missing data for the variable job stability after treatment is attributed to an error in the survey instrument calling for a skip pattern that

unnecessarily excluded items that should have been included. The missing data for the variable marital status before treatment can most likely be attributed to interviewer or coder error. The small amount of remaining missing data is mostly accounted for through refusals and don't knows; there are few unexplained missing responses. The missing data for the analysis averages approximately ten percent.

Recall

This study looks at the effects of anger and negative emotions on criminal outcomes. Therefore, it is practical to limit the potential for recall problems by limiting analysis of models containing these variables to those measuring effects five years after treatment. As such, analyses of these retrospective data are considered cross-sectionally, and no attempt will be made to use recall of emotions from a decade before the interview to predict criminal outcomes. Thus, the focus of the analysis will be placed on the reference period five-years after treatment.

A large body of research points to potential problems of reliability in retrospective reporting of social behaviors (Belli et al. 2001) and of depressive episodes. Much of it seriously calls into question subjects' abilities to

consistently recall and report their experiences over time. One study in particular looks at the reliability of the numbers of past depressive episodes reported by individuals who experienced a change in depressive status between two assessments made one year apart (Schraedley et al 2002). The study found that the stability of such reporting is questionable. Specifically, reports were determined to be consistent with the mood-congruent reporting hypothesis, that is, the reporting of past depressive episodes was greatly influenced by a respondent's current depression status.

Similarly, Aneshensel et al (1987) found that once an individual recovers from a depressive episode he or she tends to report having experienced fewer past episodes of depression than do those who are still depressed at the time of reporting.

Still, other research suggests that respondent reporting of having experienced any previous episodes of depression and reports of lifetime depression are relatively stable. For example, Prusoff and colleagues (1988) found that reliability was compromised when respondents were asked to report the *number* of depressive episodes they experienced over various time-periods. Those who reported that they were currently depressed reported a greater number of previous episodes than

those who were not currently depressed. However, the same study also showed that respondents were able to provide reliable reports of having ever experienced depression.

This is important for the current study because individuals who ever experience depression often will experience multiple episodes. One of the strongest predictors of depressive episodes is having experienced a depressive episode in the past (Gonzales et al. 1985). Therefore, one might expect that the respondents who have ever experienced depression might well have experienced at least one or more episodes over the five-year period.

Although some degree of telescoping, mood congruence, and memory decay is expected in the current study, these concerns were addressed to some extent by way of the event history calendar. Dates and events that were important to the client such as births, deaths, marriages, and the date of treatment were used as landmarks to help respondents reconstruct what happened to them, when it happened, and how often. Color-coding was also used to signify blocks of time so respondents could visually identify the time-period to which a question referred.

In general, survey researchers have long been aware of errors in reporting autobiographical information (see Schwarz

and Sudman, 1994). The use of event history calendars is just one way survey researchers have found to improve the quality of retrospective reporting. Limitations of autobiographical recall include under-reporting, incorrect reporting of when events occurred, and incorrectly reporting how often they occurred. Even distinctive events have been shown to sometimes be under-reported; this tends to be attributed to length of retention interval and to the duration of the event. With respect to incorrectly reporting when events occurred, respondents have been known to engage in what is known as forward telescoping; a phenomenon where they report an event having had occurred more recently than it actually did. Finally, in mis-reporting how often an event occurred, research has shown that errors occur for a variety of different reasons including event frequency, regularity, length of retention interval, as well as variability in response to how the survey question is asked (Menon, Raghubir & Schwarz, 1995).

The use of event history calendars in survey research has been shown to lead to high quality reporting, even when retention intervals are several years (Belli, 1998). Event history calendars encourage respondents to consider events within the broader context of their lives and to inter-relate

events and the timing of events (Freedman et al. 1988). High levels of agreement have been found between concurrent reporting and reports made both three (Caspi et al. 1996) and five (Freedman et al. 1988) years later using life history calendars on measures of work, school, living arrangements, cohabitation and job training.

More recently, survey researchers have used event calendars to help respondents recall major life events such as births, deaths, serious mental and physical illness, felony crimes, and employment with a high level of success. More mundane events are also recoverable, however to achieve the best quality data, recall intervals for these types of events must be reduced (Belli, 1998).

MEASURES

Dependent variables

The dependent variable measuring "Crime" was formulated by collapsing a series of yes/no questions measuring self-reported criminal behavior into a single dichotomous measure of crime. Each question from which the measure is comprised asks the client whether she committed twelve different offenses during the five-year periods before and after treatment including the months leading up to the interview.

The questions cover a wide range of criminal offenses that include both serious and non-serious crimes³. Offenses having to do with drug and alcohol offenses were purposefully omitted from the dependent variables for two reasons. First, the sample is comprised of addicts and alcoholics so commission of these types of criminal acts could be considered characteristic of the entire sample and their inclusion would potentially confound the analysis. Second, a measure of any drug or alcohol use is implemented as a control variable for the time-period after treatment.

The problems associated with the criminal behavior measures in this study are ones common to the field of criminology, although many are characteristic of official records data. The dichotomous measures of crime limits the type of statistical analysis to logistic regression, and compresses the data by classifying it only in terms of whether the client committed any crime during the five- year period, or not. The alternate method for this dataset would have been simply to count the number of affirmative responses for each offense. The sum would have represented the number of *different* crimes committed, but it would remain unclear how many times the

³ Prostitution was included in the measure of crime, however some scholars argue that because of its links to occupation, objectification, and violent victimization it may have different implications than other types of crime (see Daly and Chesney-Lind 1988)

client committed each type of crime. This method for measuring the outcome did not seem adequate. As a result, even though by using a dichotomous measure of crime, the data for this analysis are highly compressed, a general theory of crime such as Agnew's General Strain Theory lends itself well to dichotomous outcomes since general theories of crime by definition should be able to predict all different types of crime (see Gottfredson and Hirschi, 1990).

These dependent measures of crime before and after treatment are distinct from the measure "prior arrest" described later in the control variable section. The dependent variables are intended to measure self-reported criminal behavior, while the self-reported "prior arrest" measure is intended as a control to take into account the innate stability of criminality that is proposed by Gottfredson and Hirschi (1990).

"In-Patient" is a dependent variable used in one before treatment model to examine whether client characteristics were related to the type of treatment center to which the client was admitted. The variable was constructed by grouping in-patient and residential patients into one group and outpatient patients and outpatient methadone clients into another. The in-patient variable is also used as an independent variable in

an after treatment model to examine whether treatment type affected the likelihood of committing crime.

Control variables:

"Age" is a categorical variable that measures the self-reported age of the respondent at the time of the interview. The original continuous variable was recoded to reflect four equal interval groups since the variable in its original configuration was determined to be non-linear in the logit. The four age groups are (28-32) (33-37) (38-42) and (43-47) at the time of the interview, therefore, the women were ten years younger (18-22) (23-27) (28-32) (33-37) five years before their treatment episode.

"Education" is a continuous variable taken directly from responses to the question: "What is the highest grade or year of school you have ever completed or got credit for?" The response categories measure the years of education completed by the respondents at the time of the interview and will be a proxy for social class.

"Use" is a dichotomous variable that measures whether the respondent reported using any illicit drugs or alcohol from the time they left the treatment center until the time of the interview. This measure was created by SROS researchers from

the responses to a lengthy series of questions regarding use patterns for each of thirteen different illicit drugs and alcohol.

"Prior" is a dichotomous variable that measures whether the respondent was arrested anytime prior to the five years before treatment. This variable was constructed from three questions: "Have you ever been arrested for any offense?"; "How old were you when you were first arrested?" and "How old are you now?" If the respondent's age at first arrest was younger than her age five-years before treatment, then the response was coded 1 for having a prior arrest, if there was no arrest, or an arrest occurred after the reference period, the response was assigned a 0. This variable is distinct from the dependent measures (crime before and after treatment). "Prior" is a control variable that takes into consideration the stability of criminality (see Gottfredson and Hirschi, 1990) by accounting for arrests that occurred prior to the ten year period covered in the interview.

Design variables

"Strain" is a construct measured as the un-weighted simple sum index of five different traumatic events. The construct includes responses to interview questions that represent all

three primary types of strain outlined in Agnew's General Strain Theory. *Presentation of negative stimuli* is indicated by having been beaten or attacked, having received a positive diagnosis for the AIDS virus, or having had a serious female health condition such as miscarriage, toxemia, abnormal pap smear or other serious female health condition.

Loss of positively valued stimuli is indicated by losing custody of a child. This component of strain measures a disruption in the family unit. It was constructed from a series of questions addressing whether the respondent had a child in the household, and whether they lost custody of the child either in the five years before treatment, or from the time they were released from the treatment center until the time of the interview. Respondents who had no children were classified with respondents who did have children, but did not lose custody. Respondents who did have children and lost custody were classified separately as having suffered disruption of the family structure.

This indicator was designed to be one part of a cumulative measure, therefore respondents with children and those without children were grouped together, and those who lost custody were grouped into another. Because of the design, and its inclusion into a cumulative measure, this indicator will not

provide any information with regard to differences in parental versus non-parental distress.

Experiencing homelessness is used to indicate *Failure to achieve positively valued goals* since homelessness demonstrates an extreme manifestation of financial difficulty. Agnew (2001) argues that homelessness is a very important strain for predicting crime since homelessness is associated with low levels of social control and enhanced circumstances for social learning of criminal behavior. Respondents were asked to answer yes or no to "After you left the treatment program and until now, have you, for at least two nights in a row, had no place to stay except for a homeless shelter or being on the street" and a similar question for the time period five years before treatment.

The resultant strain composite variable is a simple sum index that joins the three component sources of strain: introduction of negative stimuli, removal of positive stimuli, and inability to achieve positively valued goals, into a single variable that measures the number of traumatic negative life events experienced by the respondent at each five-year period. Thus, "strain" is a composite of responses that includes several specific traumatic events that are central to the lives of women, or have specific meaning for women and is

therefore important for capturing gender specific risk factors for criminal outcomes. The composite measure is coded as a five level variable devised for the purposes of representing cumulative strain with higher numbers representing greater levels of strain.

"Race and ethnicity" is a dichotomous variable that was created by collapsing the original race variable into two categories: white and other than white. The variable in its original form had very few individuals in certain categories. 58.7% of the sample was white, 34.4% were Black or African American, .5% were Asian or Pacific Islander, 2.1% were Alaskan Native, Native American, or American Indian, and 4.3% described themselves as something other than the above categories. To remedy the problem of zero cells at the level of the dependent variable, the groups with few respondents were combined with the Black and African American category. The resulting two- category race variable was then combined with responses to a question regarding the respondent's Hispanic origin to create two categories: white non-Hispanic and other than white non-Hispanic. For the purpose of clarity, this research will use the term "white" to refer to white non-Hispanic women, and "non-white" to refer to women who are other than white non-Hispanic.

Social Control Variables

"Marriage" is a dichotomous indicator of the respondent's marital status at the time of the interview and when first entering treatment. Marital status, without respect to marital quality, has been used with some success in studies that considered the effects of adult informal bonds as a mechanism of social control to predict desistance from criminal conduct (see Warr, 1998; Horney et al. 1995).

"Job stability" is an indicator of the strength of informal adult social bonds. The construct measures the length of time the respondent was employed at any one full-time job. A job stability score was generated from responses to four questions regarding the respondents' employment history for each period. The final measure produced a ratio of the average of total months worked to the average length of time worked at any one full time job.

The first question determined whether the respondent had ever been employed full-time. Respondents who answered "No" to this question received a work stability score of zero. For those who had worked full time, responses to the remaining questions were used to produce an index to measure job stability by converting response units from years into months. From these conversions, a ratio of months worked at one job to

total months worked for the period produced scores ranging from zero to 1.0. The resulting scores were collapsed into a dichotomous measure in which scores below .30 indicated low job stability and scores above .30 indicated high job stability.

Thus, those who did not work full-time received a score of zero; respondents who worked a specific amount of time at any one job received a higher score than did the respondents who worked the same amount of time at more than one job. Alpha reliability estimates for responses to the four questions are .8451 before treatment and .8753 after treatment.

The research of Sampson and Laub (1993) has successfully shown that informal adult social bonds such as stable employment, promotes conventional behavior through increased social control. Specifically, in a longitudinal study of adult men, Sampson and Laub (1993) were able to show that stable employment effectively decreased criminal behavior. They hypothesized that the effect was the result of mutual dependence and trust that develops between employer and employee over extended periods. They were also able to show that unstable employment, which is indicative of weak, informal bonds, can promote involvement in adult criminal behavior regardless of any history of juvenile delinquency.

This suggests that adult informal bonds are important to adult behavior despite effects of stable forces and traits.

"Negative emotions" (non-dichotomous version) is a construct representing the presence of negative emotional affect that is emotion other than anger. This variable is presented as a more sensitive version of its dichotomous counterpart to be used in the base models when mediation is not being tested. Four questions asked separately for each time-period were used to create a simple sum index. "In the five years before (after) the program (and until now) did you have at least two weeks when you felt very sad, blue, or depressed and you lost interest or pleasure in things you usually cared about?" In the five years before (after) the program (until now) did you attempt suicide?" In the five years before (after) the program (and until now) did you see a doctor, nurse, counselor, or social worker for problems with your emotions, nerves, or mental health?" In the five years before (after) the program (and until now), did you stay overnight in a hospital or clinic for treatment of your emotions, nerves or mental health that wasn't the result of your alcohol or drug use?" Greater values indicate greater negative emotion. The alpha reliabilities for the variables

are .5999 before and .6089 after treatment respectively.

Factor analysis resulted in all four questions loading on one factor at each time-period.

Mediating variables:

"Negative emotions" is a dichotomous variable constructed for the purposes of testing mediating effects. Using the "negative emotion" simple sum index, respondents were assigned a 1 if they responded yes to any of the four questions that made up the index, and 0 if they did not respond affirmatively to any of the negative emotion index questions.

"Anger" is a dichotomous variable that is constructed from responses to the question, "After you left the treatment program in 1990 and until now, how often have you had trouble controlling your temper so that you behaved violently--would you say often, sometimes, rarely or never?" The original categories are collapsed so that those respondents who reported that they rarely or never had trouble controlling their temper are in one category and those who reported that they often or sometimes had problems controlling their temper are in the other. This variable will be used to indicate whether the women had tendencies to experience uncontrollable anger.

The literature points to one main consideration when it comes to the proper measurement of anger. There are two types of anger, trait based and situational anger (Schieman 2000). The two types are highly correlated, in predicting aggression in anger-provoking situations, (Capowich et al. 2001), but it is still unclear whether each type of anger leads to different types of criminal outcomes or whether group differences exist. For instance, there is evidence that anger among young females may lead to interpersonal aggression regardless of the statistical significance of current strain (Piquero & Sealock, 2004). The indicator of anger for this study represents dispositional anger since the question suggests a propensity for anger rather than indicating an anger response to a specific circumstance.

In defense of using a one-item measure of anger, and a non-standard measure of negative emotion, it must be pointed out that this study is designed to be a preliminary examination of the mechanisms mediating women's crime. Agnew's theory does not explicitly frame his concepts of negative emotion into measures of a distress continuum or the presence of absence of a psychological diagnosis, instead he describes the mechanizing concepts central to his theory as "emotional

affect" that can include a whole range of emotions such as frustration, anger, sadness, and guilt.

Agnew reports there are few datasets with "good" measures of negative affect that also include good measures of crime. This study, as with many others that have tested strain theory must work within the confines of a secondary dataset. Even though these measures cannot be considered optimal, the study of negative emotional affect and women in Criminology is still in its early stages and all opportunities to shed light on the relationships between variables for different populations should be explored.

Other Measurement Considerations

There are several important considerations associated with determining differences between measures of social control or social learning and a measure of strain (Agnew, 2001). The difficulty lies in that one can effectively argue that a bad marriage is a source of strain, and conversely, a good marriage is associated with higher levels of social control through involvement, attachment, commitment, and belief. Moreover, one could argue that if an individual's spouse is involved in criminal behaviors, then by association the partner has increased likelihood of also becoming involved in

criminal behavior. The question then becomes how does one separate strain from other theories, or is it even necessary?

Agnew (2001) proposes that as an optimal approach, the concepts from all three of these theories should be measured and included within the models. If this is not possible, however, he also describes how different types of strain can *imply* different levels of social control and social learning within them. For example, as described earlier, child-care burdens are believed to have a weak association with criminal outcomes because such strains are associated with high levels of social control and low opportunity for crime and low associations with unconventional others. On the other hand, homelessness is believed to be a type of strain that is strongly associated with criminal outcomes because it is also associated with low levels of social control, increased contact with individuals who commit crime, and high opportunity for crime. These examples suggest that certain types of strain are innately inter-twined with social control and social learning factors that may or may not be easily separated from the source of strain.

There are at least two different strategies to differentiate which theoretical process is responsible for producing criminal outcomes. The strategy that appears to be

the most direct involves examining the intervening processes of each theory. For instance, strain theory argues that crime is increased because of its effect on negative emotions, social control theory argues that the perceived costs of crime are decreased when there is low social control, and social learning theory argues that non-conventional associations foster the learning and desirability of crime. Agnew (2001) argues that it is difficult to find a data set that includes all of these intervening processes.

A second way to distinguish effects related to social control, social learning, or strain is through implied relationships. For example, certain strains may affect crime because they reduce levels of social control or tend to promote opportunities for the learning of criminal behavior. Alternately, if social control measures and social learning measures are available, strain may be measured while social control and learning measures are statistically controlled to determine the effects of strain. For instance, one could examine the effects of physical abuse on crime while controlling for marital attachment.

This paper will employ both of these strategies; the intervening relationship of strain theory will be evaluated, and measures of social control theory will be statistically

controlled. As for the effects of social learning theory, they are implied through measures of homelessness and through drug and alcohol use, since both may be easily linked to circumstances where associations with unconventional others are made.

CHAPTER FOUR

RESULTS

The statistical analyses in this study were performed with SPSS version 10.0. All regression models were conducted with logistic regression analyses. While logistic regression models may be fitted using either the binary logistic regression procedure or the multinomial regression procedure, analyses were carried out using multinomial regression models so that the cases would be aggregated into subpopulations. SPSS recommends that if all predictors are categorical, or if any continuous variables are limited in range or value, then the subpopulation approach must be used to produce valid goodness of fit tests (Norusis, 1999).

Analysis of the data began by examining univariate logistic regressions for each variable with the dependent variables to secure a baseline of coefficient size and direction. Later these were compared to coefficient sizes and directions in more complex multivariate models.

The second preliminary step of the analysis involved scrutinizing the continuous variable "Age" for linearity in the logit. Linearity means that a change in the logit of the dependent variable "criminal behavior" is constant for a one-

unit change in "Age" and therefore does not depend on the value of "Age" (Menard 2002). The linearity of "Age" within the logit was evaluated with two tests, using the full sample of females. The first, the Box-Tidwell test, involves a transformation that adds "Age" multiplied by the natural logarithm of "Age" to the existing model. A statistically significant coefficient for the transformation indicates a non-linear relationship in the logit (Hosmer & Lemeshow 2000; Menard 2002). A test of the relationship with the current data resulted in a statistically significant transformed coefficient, indicating nonlinearity existed. To identify the approximate shape and confirm nonlinearity in the logit, the "logit step test" was performed. After transforming "Age" into an equal interval categorical variable, the test determines whether the beta coefficients approximate linearity. Results of the test produced an inverted "L" shape re-confirming non-linearity in the logit. This shape is consistent with the well-known age-crime curve. Thus, to mitigate the lack of linearity, a categorical variable for age was used in the models so that separate estimates could be generated at each level of the factor.

Multicollinearity Diagnostics⁴

Pearson's correlations for all predictor variables are presented in Appendix A. An inspection of the relationships between variables represented in the models suggests that the associations are small and moderate; none of the correlations between measures exceeded .36, and associations are in the theoretically expected directions. Examination of the tolerances for the full before and after models containing all predictors suggests that multicollinearity is not a problem. Tolerance values greatly exceeded (.1), the cutoff indicating serious multicollinearity (Menard 1995). In fact, tolerance factors for all variables fell within the range of .790 and .959. Variance inflation factors for the measures also suggested that multicollinearity was of no concern. Myers (1990) argues that variance inflation factors with magnitudes greater than 10 are cause for concern; VIF statistics for the measures in this study were well below the cutoff, as they fell within the range between 1.042 and 1.266.

Further diagnostic examination for indications of multicollinearity obtained with eigenvalues, condition indexes, and variance proportions were equally encouraging.

⁴ Aside from bivariate correlation comparisons, SPSS logistic regression does not produce collinearity diagnostics however, VIF, TOL as well as other important statistics to assess multicollinearity may be accessed with linear regression diagnostics in SPSS (Field 2000).

Field (2000) explains that if any eigenvalues are comparatively much larger than the others, then the solutions of regression parameters have the potential to be greatly influenced by even small changes in the predictors or the outcomes. In assessing the full models, one eigenvalue in each full model was moderately large compared with the others, however, not alarmingly so. Similarly, the condition index, defined as the square root of the ratio of the largest eigenvalue to the one of interest, produced one value in each full model somewhat higher than the others, but not so great that they should have been considered problematic. Additional evidence supporting negligible concern for issues of multicollinearity was found in the comparisons of variance proportions with eigenvalues. There did not appear to be any combinations of extremely high variance proportions coupled with a low eigenvalue at one dimension. If there had been, it would have indicated that the variances of regression coefficients associated with that eigenvalue are highly dependent, thus signaling multicollinearity problems (Field, 2000). Overall, results of the five tests conducted to test for multicollinearity suggest there is no major cause for concern.

Analytical Strategy

Table 1 presents the means and the standard deviations for all variables in the analyses and provides estimates for the mean values of the variables for those who reported criminal activity. Descriptive statistics showing proportions of each strain, crime, and odds ratios of strain and crime in addition to proportions by race and ethnicity are reported in Appendices D through G.

Following the descriptive statistics, the demographic effects models are estimated in the first models of tables 2 and 3 to assess the relationships of age, race, marital status, education, and prior offenses to the outcome variables. The primary dependent variable (crime) is coded 1 if respondents reported that they had committed a crime in the five years before, or five years after treatment, and 0 otherwise.

Following the demographic base models, blocks of predictor variables are added to assess the degree to which each of the variables help explain the hypothesized relationship between strain and crime. Tables 2 and 3 also display full model estimates and include tests for interaction effects between race and ethnicity, negative emotion, and job stability to

determine how negative emotion and social controls might differ according to these factors.

As discussed earlier, the focal point of these analyses will be on the models after treatment in order to minimize the effects of memory deterioration on the results. The results will provide a somewhat cursory look at the same relationships five years before treatment, but in evaluating time one models, emphasis will be placed on the effects of traumatic strain and differences in treatment type, not on negative emotional affect.

Tables 4 and 5 will present models to estimate the effects of the demographic predictors and strain on anger and negative emotion, the variables that potentially mediate the effects of strain on criminality.

Table 6 splits the sample into sub-groups according to race and ethnicity in order to examine more closely the effects of strain, negative emotion, and anger with respect to group differences. Similarly, Table 7 separates the sample according to race and ethnicity to explore possible differences in effects of social control, demographic variables and strain on crime 5 years before treatment.

Table 8 provides logistic regression models for before and after treatment by age. Age is an important predictor of

criminal activity in general; exploration of women's criminal activities within different age groups may be especially important for this high-risk sample.

Table 9 examines whether demographic factors influences the type of treatment the women received, either in-patient or outpatient. Additionally, the table presents a model to determine whether treatment type has substantial effects for predicting the full model in the evaluations of strain and negative emotions and anger on crime after treatment.

RESULTS OF THE ANALYSES

The means and standard deviations for the entire sample are displayed in Table 1. Means and standard deviations for those who committed crime before and after treatment are also given for comparison. Fifty-eight percent of the women committed at least one of the twelve offenses before treatment, and forty-two percent committed at least one after treatment.

The average age of the women in the sample is 37 years old, and the average number of years of education completed is 11.5; slightly less than that of a high school graduate. Fifty-six percent of the women are white non-Hispanic.

The beta coefficients for age in demographic model 1, shown in Table 2 (after treatment), are consistent with past

Table 1

	Descriptive Statistics					
	Entire Sample		Criminal Behavior Before = Yes		Criminal Behavior After = Yes	
	Min	Max	Mean	Std. Dev.	Mean	Std. Dev.
			N = 396		N = 227	N = 162
Crime Before Treatment	0	1	.579	.494	1	0
Crime After Treatment	0	1	.419	.494	.580	.495
Age Group	1	4	2.381	1.033	2.269	1.006
White	0	1	.561	.497	.589	.493
Married Before	0	1	.307	.462	.306	.462
Married After	0	1	.311	.463	.330	.471
Years Education	1	17	11.570	2.310	11.320	2.250
Arrest Prior to 1986	0	1	.416	.494	.522	.501
Drugs/Alcohol After Treat	0	1	.826	.380	.863	.344
High Job Stability Before	0	1	.337	.473	.255	.437
High Job Stability Before	0	1	.283	.451	.251	.435
Strain Before	0	4	1.046	.980	1.308	1.001
Strain After	0	4	.763	.911	.886	.948
Negative Emotion Before	0	4	1.412	1.158	1.670	1.172
Negative Emotion After	0	4	1.452	1.146	1.620	1.138
Anger Before	0	1	.313	.464	.388	.488
Anger After	0	1	.218	.413	.243	.430
In-Patient Treatment	0	1	.487	.501	.480	.501
Age	28	47	36.860	5.250		
N			396		227	162

**Note for binary variables 1 = yes, 0 = No

Table 2

Independent Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Age (28 thru 32)	1.051 ***	.388	1.432 ***	.425	1.335 ***	.434	1.484 ***	.460	1.508 ***	.464
Age (33 thru 37)	1.009 ***	.370	1.294 ***	.403	1.209 ***	.413	1.285 ***	.435	1.086 **	.438
Age (38 thru 42)	.358	.397	.597	.436	.563	.446	.675	.468	.483	.474
Non-white	.305	.252	.121	.279	.198	.289	.280	.307	2.476 ***	.782
Un-married	.234	.264	.027	.292	-.156	.306	-.209	.321	-.226	.331
Years of Education	.002	.056	.073	.063	.094	.066	.122 *	.071	.099	.073
Crime 5 Years before	1.677 ***	.256	1.727 ***	.282	1.654 ***	.290	1.653 ***	.303	1.663 ***	.307
Used Drugs or Alcohol			2.138 ***	.458	2.108 ***	.472	2.224 ***	.492	2.230 ***	.504
Low Job Stability			1.740 ***	.338	1.674 ***	.346	1.750 ***	.372	2.437 ***	.505
Strain					.649 ***	.166	.434 **	.175	.473 ***	.180
Negative Emotion							.499 ***	.138	.763 ***	.203
Angry							.831 **	.368	.752 **	.373
Race/ethnicity x Negative Emotion									-.542 **	.276
Race/ethnicity x Job Stability									-1.795 **	.736
Constant	-.645	.775	-2.531 ***	.950	-3.110 ***	1.001	-3.487 ***	1.134	-4.118 ***	1.217
N	355		355		355		355		355	
-2 Log likelihood	412.754		353.157		336.234		312.915		303.097	
Chi-square	67.416		127.014		143.936		167.255		177.073	
R Square (Nagelkerke)	.233		.405		.448		.505		.528	
Degrees of Freedom	7		9		10		12		14	

***p ≤ .01 **p ≤ .05 *p ≤ .10

Omitted categories: Age (43 thru 47), White, Married, No Crime 5 years before, No drugs/alcohol, High Job Stability, Not Angry.

criminological research on age and crime; younger women are more likely to commit crime than are older women. However, this trend is consistent only for the two youngest groups $b = 1.051$ ($p \leq .001$), $b = 1.009$ ($p \leq .001$), while those in the 38-42 year old category were no more or less likely to have committed crime than the 43-47 year old reference group, even after controlling for crime committed in the five years before treatment. This finding is consistent across all five models in table 2, even after controlling for all other design and control variables.

Model 2 in Table 2 shows that women who relapsed, or continued to use drugs and alcohol after being discharged from treatment were much more likely to commit crime than those who abstained from drug and alcohol use $b = 2.138$ ($p \leq .001$). Low levels of social control also increased the likelihood of committing crime $b = 1.740$ ($p \leq .001$); women who had lower levels of job stability were much more likely to commit crime than those reporting high job stability.

In Model 3, Table 2, we find with the addition of the strain variable to the model, that higher levels of strain are associated with the increased likelihood of committing a crime $b = .649$ ($p \leq .001$). This finding supports the basic tenet of strain theory that greater levels of strain are associated

with increased criminal activity, and this relationship holds despite controlling for the effects of social control.

Model 4, Table 2 presents the effects of negative emotions and anger on the likelihood of committing crime. Results of the additions are both statistically significant, with higher levels of negative emotion increasing the odds of committing crime $b = .499$ ($p \leq .001$), and the presence of anger increasing the odds as well $b = .831$ ($p \leq .05$).

The increased odds of criminal activity associated with negative emotions is inconsistent with Broidy's (2001) findings that "other emotions" decrease the likelihood of delinquency among undergraduate college students, but is consistent with Brezina's (1996) findings that emotions other than anger are related to criminal conduct.

In the current study, the addition of these two variables creates a slight attenuation in the magnitude of the strain coefficient, suggesting that either one or both types of emotional affect may be part of an indirect effect of strain on criminal outcomes. However, because the strain coefficient remains statistically significant after adding anger and negative emotions, the results are inconsistent with the GST insinuations of a total mediating effect of anger in the relationship between strain and crime (Agnew, 1992; Broidy

2001) and with the argument that emotions other than anger are exclusively associated with legitimate coping strategies (Broidy, 2001).

Model 5 in Table 2 adds the effects of two theoretically interesting and statistically significant interactions: race and ethnicity by negative emotions, and race and ethnicity by job stability. The results indicate that the main effect of race and ethnicity is suppressed in earlier models until the interaction effects are added. Once added, the effect of race and ethnicity becomes large and statistically significant $b = 2.476$ ($p \leq .001$). Specifically, the results suggest that the effect of negative emotions on likelihood of committing a crime differs according to race and ethnicity $b = -.542$ ($p \leq .05$). Similarly, the effect of job stability on the odds of committing crime differs according to race and ethnicity $b = -1.795$ ($p \leq .05$). This finding is explored further in subsequent models.

Overall, the results of the final model in Table 2 demonstrate that higher levels of strain increase the odds of committing crime. The results also show that women who report having trouble controlling their tempers are significantly more likely to commit crime even when holding constant the effects of strain, negative emotions, drug/alcohol use, crime

before treatment, social control (job stability) and demographic factors. This finding is consistent with the tenets of strain theory. In addition to this finding supporting GST, the results also demonstrate that negative emotions increase the odds of committing crime even after controlling for the effects of strain, anger, and drug/alcohol abuse, crime before treatment, social control, and demographic factors. This finding lends support to the stress process literature (Mirowsky & Ross, 1995) that reports a strong relationship between deviance or antisocial behavior and depression, but is inconsistent with strain literature that suggests depression-like symptoms and negative emotions other than anger are negatively associated with delinquency and crime (Broidy, 2001; Sharp, 2005).

Table 3 displays the coefficients pertaining to models for the time-period five years before treatment. One notable difference in the specifications of before treatment and after treatment models is that before treatment models include a variable that measures any arrests occurring prior to five years before treatment. This variable is used primarily as a control for predisposition. Results in Model 1 shows the coefficient for the prior arrest measure is statistically significant ($b = 1.231$ $p \leq .001$) suggesting that women who were

arrested at any-time prior to five years before treatment were more likely to have committed crime compared to those who had not been arrested.

Overall, the time one coefficients across all five models in Table 3, present similar patterns to those found in the after treatment models presented in Table 2. One notable exception, however, is that the beta coefficient for the interaction effect of race and ethnicity and negative emotion was not statistically significant before treatment. One possible reason for this difference is that over time, the respondents' memories regarding their emotional status may have attenuated, whereas respondents' recollection of emotional statuses collected more proximally to the interview could be more easily retrieved and thus reported more accurately.

Although the findings here still show an effect of strain on crime, the lack of statistical significance for the negative emotion coefficient is still consistent with, and provides a possible explanation for, past studies that have found evidence of strain on delinquency in cross-sectional models, but were unable to show lagged effects of strain on delinquency. Agnew and White (1992) did not find support for a strain delinquency relationship using data with 3 years

Table 3

Independent Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Age (23 thru 27)	1.179 ***	.361	1.187 ***	.364	1.112 ***	.377	1.144 ***	.387	1.270 ***	.397
Age (28 thru 32)	.527	.324	.612 *	.329	.433	.341	.468	.352	.441	.356
Age (33 thru 37)	.709 **	.343	.759 **	.348	.581	.358	.553	.368	.542	.371
Non-white	-.223	.236	-.311	.242	-.210	.250	-.043	.261	1.142 **	.514
Un-married	.023	.250	.013	.253	-.066	.262	.016	.267	.007	.273
Years of Education	-.057	.053	-.019	.055	.010	.058	.023	.059	.021	.060
Prior Arrest	1.231 ***	.247	1.145 ***	.251	1.032 ***	.259	.996 ***	.263	1.120 ***	.271
High Job Stability			.759 ***	.253	.683 ***	.262	.643 **	.268	1.188 ***	.346
Strain					.605 ***	.137	.476 ***	.144	.480 ***	.146
Negative Emotion							.276 **	.118	.373 **	.149
Angry							.622 **	.280	.645 **	.285
Race/ethnicity x Negative Emotion									-.224	.237
Race/ethnicity x Job Stability									-1.401 ***	.544
Constant	1.271 *	.714	.291 ***	.795	-.530 ***	.843	-.619	.919	-.947	.938
N	360		360		360		360		360	
-2 Log likelihood	431.545		422.493		401.151		388.330		380.343	
R Square (Nagelkerke)	.142		.172		.240		.278		.302	
Degrees of Freedom	7		8		9		11		13	

***p ≤ .01 **p ≤ .05 *p ≤ .10

Omitted categories: Age (38 thru 42), White, Married, Prior Arrest Record, High Job Stability, Not Angry.

between data points. Similarly, Hoffman and Su (1997) were unable to find an association between negative life events and delinquency in a longitudinal study. These studies differ from the current study in part because they did not include the effects of negative emotions. One might infer that the problems associated with predicting effects of strain on delinquency in longitudinal models might be found in the emotional affect mechanism. GST hypothesizes that the effects of strain on delinquency will be somewhat proximal to one another (Agnew, 2001; Broidy, 2001). One study addressed this problem by asking respondents to recall strain, emotions, and delinquency over the past five years arguing that repeated strain, not isolated incidents are necessary to trigger delinquency (see Broidy, 2001).

Tables 4 and 5 explore the extent to which anger and negative emotions intervene in the relationship between stress and criminal behavior. Table 4, Model 1 provides the base model showing the direct effect of strain on crime after treatment $b = .649$ ($p \leq .001$). Model 2 adds the mediating effect of anger, and a noticeable drop occurs in the strain coefficient $b = .573$ ($p \leq .01$) suggesting that some degree of mediation exists. Model 3 shows the results of the full model regressed on anger, to establish that strain does in fact

predict anger $b = .471$ ($p \leq .001$). Further calculations indicate that there is some degree of mediation in the relationship; the estimate of the indirect effect of strain on crime through anger is $b = .4997$ (.252) ($p = .0424$). Furthermore, the estimate of the beta coefficient for the total effect is $b = 1.073$ (see appendix C for a list of formulas used to calculate mediating effects and standard errors).

Table 5 presents models to show the degree of mediation that occurs between strain and crime through negative emotion. Model 2 presents the effects of the dichotomous version of the negative effects variable on crime after controlling for strain. Again, one observes a noticeable attenuation in the strain coefficient when comparing Model 1 without negative emotion with Model 2 when negative emotion is added $b = .556$ ($p \leq .01$). Model 3 presents confirmation that indeed strain is a statistically significant predictor of negative emotion $b = .866$ ($p \leq .001$). Calculations to estimate the extent to which negative emotion mediates the relationship indicates that there is a statistically significant indirect effect of negative emotion $b = .847902$ (.3566) ($p = .0164$); thus the total effect of strain on crime is $b = 1.4039$.

Table 4

Independent Variables	Mediating Effects of Anger					
	Model 1		Model 2		Model 3	
	Crime After B	S.E.	Crime After B	S.E.	Anger After B	S.E.
Age (28 thru 32)	1.335 ***	.434	1.335 ***	.444	.571	.452
Age (33 thru 37)	1.209 ***	.413	1.212 ***	.421	.235	.445
Age (38 thru 42)	.563	.446	.524	.454	.630	.463
Non-white	.198	.289	.096	.295	.361	.291
Un-married	-.156	.306	-.174	.311	.096	.314
Years of Education	.094	.066	.114 *	.068	-.060	.066
Crime 5 Years before	1.654 ***	.290	1.661 ***	.294	.254	.293
Used Drugs or Alcohol	2.108 ***	.472	2.099 ***	.475	.569	.420
Low Job Stability	1.674 ***	.346	1.792 ***	.356	-.146	.327
Strain	.649 ***	.166	.573 ***	.170	.471 ***	.142
Negative Emotion						
Angry			1.061 ***	.353		
Constant	-3.110 ***	1.001	-2.461 **	1.047	-1.387	.968
N	355		355		355	
-2 Log likelihood	336.234		326.866		332.202	
Chi-square	143.936		153.304		24.889	
R Square (Nagelkerke)	.448		.472		.106	
Degrees of Freedom	10		11		10	

***p ≤ .01 **p ≤ .05 *p ≤ .10
 Omitted categories: Age (43 thru 47), White, Married, No Crime 5 years before, No drugs/alcohol, High Job Stability, Not Angry.

Table 5 Magnitude of Mediating Effects of Negative Emotions

Independent Variables	Model 1 Crime After		Model 2 Crime After		Model 3 Negative Emotion After	
	B	S.E.	B	S.E.	B	S.E.
Age (28 thru 32)	1.335 ***	.434	1.376 ***	.443	.039	.396
Age (33 thru 37)	1.209 ***	.413	1.221 ***	.424	.281	.369
Age (38 thru 42)	.563	.446	.552	.452	.431	.407
Non-white	.198	.289	.299	.296	-.719 **	.289
Un-married	-.156	.306	-.159	.311	.369	.292
Years of Education	.094	.066	.110	.067	-.085	.062
Crime 5 Years before	1.654 ***	.290	1.652 ***	.295	.577 **	.270
Used Drugs or Alcohol	2.108 ***	.472	2.131 ***	.476	.228	.326
Low Job Stability	1.674 ***	.346	1.636 ***	.353	.625 **	.291
Strain	.649 ***	.166	.556 ***	.168	.886 ***	.209
Negative Emotion			.957 ***	.353		
Anger						
Constant	-3.110 ***	1.001	-3.052 ***	1.020	1.342	.895
N	355		355		355	
-2 Log likelihood	325.719		318.036		342.435	
Chi-square	143.936		151.619		51.176	
R Square (Nagelkerke)	.448		0.468		0.198	
Degrees of Freedom	10		11		10	

***p ≤ .01 **p ≤ .05 *p ≤ .10

Omitted Categories: Age (43-47), White, Married, No crime 5 years before, No drugs/alcohol, High Job Stability.

In addition to intervening properties, the results of the logistic regression on negative emotions in Model 3 demonstrate that women who are white, who reported having committed a crime in the five-year period before treatment, and those with low job stability, were more likely than their counterparts to report having experienced negative emotions after treatment⁵. This is consistent with other research showing that although African Americans may *experience* more distress and depressive symptoms than do whites, they report lower levels of psychiatric illnesses (Kessler, 1979; Kessler, Michelson & Williams 1999). Specifically, with respect to depression and race, African Americans have lower rates of clinical depression, drug addiction, affective disorders, and comorbidity than do whites (Kessler et al. 1994). They do, however tend to have higher levels of psychological distress than whites (Mirowsky and Ross 2003; Vega and Rumbaut 1991).

⁵ The dichotomous negative emotion variable used here measures the presence or absence of any one of the four indicators. For exploratory purposes, a separate model was tested using an alternate measure of negative emotions in which (0-1)= low and (2-4)= high levels of negative emotion. The results of this model indicated that race/ethnicity and low job stability are not statistically significant. This is consistent with the view that it is unclear whether African Americans and whites differ in levels of depression and psychological distress (George and Lynch, 2003), and the argument that race differences in distress may be conditioned by socioeconomic status (Frerichs, Aneshensel & Clark, 1981). What is important for this study is whether cumulative strain predicts the measure of negative emotion, as a test of the statistical significance of a mediating effect.

The results of this table are also consistent with Mirowsky and Ross' (2003) contention that a positive relationship exists between depressive symptoms and anti-social behavior. They are also consistent with research showing that full-time employment is associated with lower levels of depression (Kessler et al. 1989; Pearlin et al. 1981).

Overall, results from the models in Tables 4 and 5 provide limited support for some arguments in GST. Table 4 is not consistent with General Strain Theory's claims of a complete mediating effect. Instead, Table 4 results coincides with recent research on "total crime" and non-violent crime that indicates anger does not completely mediate the relationship between strain and anger.

Table 5 results show that negative emotion is involved in a mediating relationship between strain and crime, and that increases in negative emotions are associated with increases in the odds of committing crime. This result is inconsistent with General Strain Theory, since Agnew claims that anger, not other negative emotions, is central in the strain-crime relationship. It is also inconsistent with other work that shows an inverse relationship between negative emotions and crime. Therefore, the inconsistency between Agnew's argument and the current research is demonstrated by the strong

association between strain and negative emotions, and negative emotions and crime.

Table 6 displays logistic regression coefficients for crime after treatment while controlling for race and ethnicity to get a better view of the relationships that form the interaction effects found in Table 2. Table 6, Model 1 results show that job stability, negative emotion, and anger are not statistically significant for predicting crime among non-white women, yet, the effect of strain remains statistically significant $b = .586$ ($p \leq .05$). Therefore, the interpretation of the interaction effects in Table 2 conclude that for non-white women there is a direct effect of strain on crime that is not mediated by anger or negative emotion, and that low social control does not increase the likelihood of crime. The insignificance of the anger coefficient is inconsistent with GST, and it is unclear why this would occur. Two possibilities come to mind. There is a difference in reporting styles of psychiatric problems according to race, as is consistent with Kessler's (1994) findings that African Americans report lower levels of distress than whites, or that conversely, there may be a different emotional mechanism operating.

Table 6

Independent Variables	Logistic Regression on Crime after Treatment by Race and Ethnicity											
	Model 1		Model 2		Model 2A		Model 2B		Model 2A		Model 2B	
	Non-white	White	Non-white	White	Non-white	White	Non-white	White	Non-white	White	Non-white	White
	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Age (28 thru 32)	1.632 ***	.618	1.059	.761	1.092	.752	1.092	.752	.965	.718	1.368 **	.630
Age (33 thru 37)	1.027 *	.602	1.165 *	.658	1.184 *	.648	1.184 *	.648	.971	.661	1.368 **	.630
Age (38 thru 42)	-.283	.692	.962	.702	.996	.700	.996	.700	.971	.661	1.368 **	.630
Un-married	.605	.543	-.761 *	.459	-.687	.450	-.687	.450	-.572	.421	1.368 **	.630
Years of Education	.111	.111	.079	.105	.041	.102	.041	.102	.115	.098	1.368 **	.630
Crime 5 Years before	1.781 ***	.437	1.876 ***	.488	1.75 ***	.478	1.75 ***	.478	1.927 ***	.458	1.368 **	.630
Used Drugs or Alcohol	2.313 ***	.769	2.733 ***	.774	2.565 ***	.743	2.565 ***	.743	2.476 ***	.692	1.368 **	.630
Low Job Stability	.468	.589	2.325 ***	.537	2.257 ***	.518	2.257 ***	.518	2.406 ***	.496	1.368 **	.630
Strain	.586 **	.263	.405	.272	.453 *	.259	.453 *	.259	.552 **	.260	1.368 **	.630
Negative Emotion	.214	.208	.776 ***	.212	.822 ***	.205	.822 ***	.205	1.501 ***	.568	1.368 **	.630
Angry	.467	.503	1.216 **	.615					1.501 ***	.568	1.368 **	.630
Constant	-2.406	1.722	-2.996 *	1.650	-3.767 **	1.595	-3.767 **	1.595	-2.289	1.515	1.368 **	.630
N	155		200		200		200		200		1.368 **	.630
-2 Log likelihood	146.505		147.053		151.216		151.216		162.585		1.368 **	.630
Chi-square	65.531		119.933		115.771		115.771		104.402		1.368 **	.630
R Square (Nagelkerke)	.461		.611		.595		.595		.551		1.368 **	.630
Degrees of Freedom	11		11		10		10		10		1.368 **	.630

*** p ≤ .01 ** p ≤ .05 * p ≤ .10

Omitted categories: Age (43 thru 47), Married, No Crime 5 years before, No drugs/alcohol, High Job Stability, Not Angry.

Note: Negative Emotion variable used has range 1-4

A possible explanation for the difference in the effect of job stability could be that although the entire sample is comprised of marginalized or otherwise high-risk women, minority women have historically experienced higher levels of employment discrimination than have white women. It is possible that high-risk non-white women have come to expect discriminatory practices and the low job stability that accompanies it. Therefore, job stability is ineffective or irrelevant as a social control.

Models 2, 2A, and 2B display coefficients for white women. Model 2 shows that when both negative emotion and anger are present, the effect of strain on crime loses its statistical significance. When negative emotion and anger are explored separately in Models 2A and 2B to determine their separate effects on strain, the models show that neither anger nor negative emotion alone can completely eclipse the effects of strain. This suggests the possibility of a complex mediating effect. The models also show that low job stability $b = 2.325$ ($p \leq .01$) increases the likelihood of crime among white women, suggesting that not only does social control have an affect on this group, but that the effect of strain remains significant even after the effect of job stability is controlled.

The results presented in model 2 also shows that when both anger and negative emotions are controlled, there is a marginally significant effect of marital status $b = -.761$ ($p \leq .10$) on committing crime. Unmarried women are less likely to commit crime than are married women. This finding is inconsistent with the direction that a social control effect might normally exert, that is, one would expect married women to commit less crime and not the reverse. The direction of the finding in this model may indicate that a social learning or a deviant peer effect is in place (Giordano et al, 2006; Simons et al. 2002). In other words, this may indicate that the criminality of white women is influenced by their spouse's behavior. Associations with older anti-social men can foster the criminal activities of some marginalized women (Giordano et al, 2006). People with similar conventionality are more likely to partner with one another than are people with dissimilar levels of conventionality making social learning of crime more likely in cases of unconventional partners (Simons et al, 2002). The significant effect of marital status was only apparent in Model 2, when both the effects of negative emotion and anger were controlled, but marital status was not significant when either negative emotion or anger were

removed. A similar effect of marital status was not apparent for non-white women.

Table 7 presents coefficients to explore further the interaction effect of job stability by race and ethnicity on crime before treatment presented earlier in Table 3. A comparison of the two models shows that among white women, the likelihood of crime before treatment increases when job stability is low $b = 1.289$ ($p \leq .001$), however a similar statistically significant relationship does not exist among non-white women. This result is consistent with the crime after treatment finding. Table 7 also shows a significant age effect for white women which does not exist for non-white women. Specifically, among whites, the youngest group $b = 1.960$ ($p \leq .001$) is more likely to commit crime than the reference group (33-37 year olds). Strain is statistically significant for both whites and non-whites as is prior arrest $b = .861$ ($p \leq .05$) $b = 1.314$ ($p \leq .001$).

Beyond the differences between sub-models that relate to statistically significant coefficients, there are also striking differences in the amounts of variance each of the sub-models are able to explain. For non-white women, the model as specified, only explains approximately ten percent of the variance while the same model for the white women explains

nearly forty percent of the variance. This difference suggests that the model is better able to describe the criminal conduct of white women and that important variables are missing to predict the criminal conduct of non-white women.

Table 8 presents models to compare the criminal behaviors of older and younger women both before and after treatment. Recall that before treatment models omit emotional affect due to the high likelihood of memory decay for emotions experienced 10 years prior to reporting. Models 1 and 2 show that after treatment, strain increases the likelihood of committing crime for both younger and older women $b = .470$ ($p \leq .05$), $b = .507$ ($p \leq .10$), as does the effect of negative emotions $b = .477$ ($p \leq .05$), $b = .493$ ($p \leq .05$). Anger, however, seems to only have a marginally statistically significant effect for the older group $b = 1.152$ ($p \leq .10$) suggesting that only among the older women does anger significantly increase the likelihood of committing crime. For the younger women, a marginally significant effect of race and ethnicity suggests that among the young, non-white women are more likely to commit crime than are white women in the sample.

Table 7

Independent Variables	Crime Before Treatment by Race and Ethnicity					
	Non-white			White		
	B	S.E.		B	S.E.	
Age (18 thru 22)	.518	.547		1.960 ***	.587	
Age (23 thru 27)	.038	.520		.621	.473	
Age (28 thru 32)	.309	.545		.658	.504	
Un-married	-.118	.410		-.115	.364	
Years of Education	.043	.089		.008	.081	
Prior Arrest	.861 **	.391		1.314 ***	.374	
Low Job Stability	-.039	.428		1.289 ***	.363	
Strain	.412 **	.193		.812 ***	.203	
Constant	-.186	1.250		-1.049	1.179	
N	155			205		
-2 Log likelihood	187.276			200.894		
Chi-square	13.035			70.051		
R Square (Nagelkerke)	.108			.392		
Degrees of Freedom	8			8		

***p ≤ .01 **p ≤ .05 *p ≤ .10

Omitted Categories: Age 33 thru 37, Married, No prior arrest, High Job Stability.

Table 8

Independent Variables	Criminal Behavior by Age Group									
	Before Treatment					After Treatment				
	Groups 1 and 2 18 thru 27		Groups 3 and 4 28 thru 37			Groups 1 and 2 28 thru 37		Groups 3 and 4 38 thru 47		
	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Non-white	-.400	.331	.135	.380	.687 *	.392	-.593	.517		
Un-married	.105	.352	-.234	.380	-.101	.398	-.375	.548		
Years of Education	-.010	.077	-.014	.086	.207 **	.091	-.054	.121		
Crime 5 Years before					1.769 ***	.389	1.705 ***	.506		
Prior Arrest	.805 **	.356	1.007 ***	.362						
Used Drugs or Alcohol					2.036 ***	.616	2.661 ***	.954		
Low Job Stability	.612 *	.355	.781 **	.383	1.845 ***	.451	1.553 **	.664		
Strain	.683 ***	.183	.539 ***	.205	.470 **	.233	.507 *	.285		
Negative Emotion					.447 **	.175	.493 **	.224		
Angry					.690	.478	1.152 *	.596		
Constant	-.029	1.026	.027	1.224	-3.462 ***	1.308	-.115	1.746		
N	202		158		207		148			
-2 Log likelihood	221.062		184.575		192.949		114.463			
Chi-square	36.032		27.291		92.623		65.972			
R Square (Nagelkerke)	.225		.212		.481		.509			
Degrees of Freedom	6		6		9		9			

***p ≤ .01 **p ≤ .05 *p ≤ .10

Omitted Categories: White, Married, No Crime Before, No Prior Arrest, No Drug/Alcohol use, High Job Stability, Not Angry.

Additionally, Model 1 shows a puzzling relationship involving an increased likelihood of crime associated with higher levels of education for young women (see Hill and Crawford, 1990). This result must be interpreted with some trepidation however, since most of the coefficients for education throughout the entire study have had a tendency to be weak and unstable.⁶ Overall, findings in Table 8 suggest that anger is significant for older women and race and ethnicity is significant for younger women.

Models 3 and 4 show coefficients grouped by young and old for the time-period five years before treatment. The results show that the effects of race and ethnicity, education, and marital status are not significant predictors of criminal behavior before treatment. Significant predictors include, prior arrest $b = .805$ ($p \leq .05$), $b = 1.007$ ($p \leq .001$); cumulative strain $b = .683$ ($p \leq .001$), $b = .539$ ($p \leq .001$); and job stability $b = .612$ ($p \leq .10$), $b = .781$ ($p \leq .05$); all were determined to increase the likelihood of committing crime before treatment for both older and younger women.

⁶ Several different combinations of the education variable were examined including presence/absence of high-school diploma, a three level factor that looked at not a high school graduate, high school graduate, and some college. All three types resulted in weak and unstable coefficients, the variable was included regardless, however, because of its undeniable importance to predicting mental health issues and crime (see Mirowsky & Ross, 2003).

To account for the possibility that the significant differences in criminal behavior uncovered thus far could be the result of differences between in-patient versus out-patient substance abuse treatment programs, the effects of treatment type were regressed on before treatment variables and added to the full post treatment model.

Table 9, Model 1 provides results of logistic regressions with five years before treatment variables regressed on treatment type to determine whether any of the factors contributed to whether the women attended in-patient or outpatient centers for substance abuse rehabilitation. The results show two marginally significant effects. Non-white women $b = .396$ ($p \leq .10$) and un-married women $b = .415$ ($p \leq .10$) were more likely to attend in-patient centers than were white women, and married women.

Table 9, Model 2 shows results of the full after treatment model on criminal offending that includes the measure of treatment facility type. Inclusion of treatment facility type had no appreciable effect on the model.

Table 9

Independent Variables	Effects of Treatment Type					
	Treatment Type with Before Txt Variables Model 1			Crime After Treatment with Treatment Type Model 2		
	B	S.E.		B	S.E.	
Age Before Txt (18 thru 22)	.201	.338		1.470 ***	.462	
Age Before Txt (23 thru 27)	-.039	.314		1.350 ***	.439	
Age Before Txt (28 thru 32)	.078	.329		.667	.472	
Non-white	.396 *	.225		.263	.307	
Un-married	.415 *	.237		-.204	.322	
Years of Education	.038	.051		.115	.071	
In-Patient Treatment				.440	.283	
Crime in 5 years Before Txt				1.679 ***	.306	
Prior Arrest	-.064	.230				
Used Drugs/Alcohol				2.276 ***	.493	
Low Job Stability	-.065	.242		1.738 ***	.373	
Strain	-.097	.116		.423 **	.175	
Negative Emotion				.503 ***	.139	
Angry				.836 **	.371	
Constant	-.881	.753		-3.152 ***	1.160	
N	360			355		
-2 Log likelihood	485.909			311.856		
Chi-square	10.285			169.7		
R Square (Nagelkerke)	.038			.511		
Degrees of Freedom	9			13		

***p ≤ .01 **p ≤ .05 *p ≤ .10

Omitted Categories: Age (33 thru 37), White, Married, Out-patient Treatment, No Crime, No Prior, No Drugs/Alcohol, High Job Stability, Not Angry.

CHAPTER FIVE

DISCUSSION

The main purpose of this study was to determine if General Strain Theory is useful to help us understand the criminal behaviors of adult females. Some scholars have argued that General Strain Theory, as well as other traditional theories of crime, are not sufficient to capture criminality in female samples (Chesney-Lind, 1989; Simpson, 1991). One important argument made by these scholars is that when gender is used as a control variable, information regarding critical differences that may exist between females is lost (Simpson, 1991). To address these claims, this research tested the generalizability of General Strain Theory to adult females. In the preceding analyses, the relationships between exposure to strain, anger, negative emotions, and criminal outcomes were explored using data collected from a sample of chemically addicted women.

The analysis began by examining the cumulative effects of strain from a list of five distinctive events that have critical relevance to the lives of marginalized adult females. By using negative events that have potential for extreme impact on the lives of women, measures conceptually similar to

those typically used in studies of General Strain Theory were tailored to take into consideration and reflect the unconventional lifestyles of chemically addicted women.

The five strains, homelessness, child custody loss, being beaten or attacked, diagnoses of female related health problems, and receiving an HIV diagnosis were each included in the cumulative measure of strain. These "objective strains" (Agnew, 2001), taken together or individually are sufficiently serious to justify the expectation that exposure to them would likely produce negative emotional affect and deleterious consequences. Because these strains were extreme, this study was able to avoid the possibility of different subjective perceptions of specific events. In sum, the severity of each of the strains used in this study coupled with their high potential for negative emotional affect provided a good test to see if they were capable of increasing the criminal conduct of women. However, despite the objective negative influence of these strains, it should be noted that the sample used in this study might have exhibited more sensitivity to exposure to strain than would a conventional sample of women, because of their high-risk status as chemically dependent individuals. Potentially, the sample is composed of women that are more vulnerable than those found in the general population.

Each specific strain used in the cumulative measure and its gender specific consequences for women are summarized in turn. First, because marginalized women tend to be the sole caretakers of their children, losing custody of them, for any reason, is likely to have devastating emotional impact. For some of these women, their children may be the single most important positive social attachment they have. Second, homelessness is a serious source of strain for anyone, but has potential to affect women in ways that their male counterparts may not experience. For instance, the potential for being victimized by others increases more dramatically for women when they are living on the street (D'Ercole and Struening, 2006; Wenzel, Leake and Gelberg, 2000). The number of homeless women caring for children continues to rise and under such conditions, these women must fear not only for their own safety, but also for the safety of their children. Those who have lost custody of their children, have little hope of regaining them if they are unable to establish a safe home environment. These difficulties are compounded by the fact that homeless women are less likely (than homeless men) to find legal, unskilled, odd jobs to obtain money necessary for immediate survival (Wenzel, Koegel and Gelberg, 2000).

Next, both HIV and female health related illness strains come with similar disadvantages for women since it is common in our society for women to be the caretakers and nurturers of the other family members. When a woman becomes ill, obtaining care from others may be problematic, especially if there is no other female family member available or willing to provide care. Financial difficulties, finding others to care for children, and the stigma associated with a disease like HIV are also crucial contributors to strain associated with physical illness.

Finally, having experienced an assault is a critical source of strain for women. Most physical assaults against women are perpetrated by their intimate partners, but they also may occur in high crime environments, like those associated with being homeless. In general, becoming a victim of physical assault is more prevalent among marginalized females than in conventional female populations. Fearfulness for one's physical well-being is emotionally traumatic, and if the abuse is occurring at home, the continued uncertainty of one's own safety becomes a chronic source of strain (Hoff, 1990; Kirkwood, 1993).

By estimating the cumulative effects of these five strains in logistic regression models, with data collected from the

national sample of adult women, this study was able to successfully demonstrate that exposure to greater numbers of these strains increases the likelihood of committing a criminal offense. This finding is wholly consistent with the main tenet of General Strain Theory, and is consistent with previous research on strain and crime. What distinguishes these results from previous work is the utilization of major event strains that are of specific importance to marginalized adult women, something that has not previously been attempted. The findings bolster the argument for continued testing of traditional crime theories with female samples, and for the continued expansion of events checklists that are relevant to the specific population being studied.

The remaining goals of this study were to examine whether anger and "other negative emotions" mediate the relationships between strain and crime. Broidy and Agnew (1997) argue that strain produces anger, which in turn, pressures individuals into crime. They also speculate that "other negative emotions" (especially depression) tend to reduce criminal behavior. This difference between effects of anger and other negative emotions on crime were proposed by Broidy and Agnew to be partially responsible for the gender gap in male and female offending. According to their argument, although

"other negative emotions" were said to have a negative effect on most criminal acts, they were hypothesized to increase some self-directed deviance such as such as eating disorders and substance abuse. Some research supports these arguments (Sharp et al. 2001; Sharp et al. 2005).

The results of this study provided only limited support for the theoretical predictions proposed by Broidy and Agnew (1997). First, the findings demonstrated that the effect of strain on crime was not entirely mediated by anger, instead, both indirect and direct effects were found. Similarly, in the models involving negative emotions, both direct and indirect effects were observed, but the relationship was in the opposite direction from theoretical predictions; negative emotions increased, not decreased, the likelihood of criminal behavior. While it is not a test of gender differences, this finding casts some doubt on the larger premise that women's greater propensity for depressed mood is the reason that women commit less crime than men.

Although the results involving "other negative emotions" do not support the arguments of Broidy and Agnew, they do support arguments made by Mirowsky and Ross (2003) claiming that individuals who engage in anti-social or illegal behaviors, and those who use drugs or drink heavily are more likely to

suffer from depression than those who abstain from these behaviors.

Mirowsky and Ross do not attempt to make any predictions regarding the direction of causality of these relationships. That is, it remains unclear whether negative emotion (depression) precedes or is an antecedent to criminal behavior, or whether the relationship is bi-directional. The current study is also unable to provide any insight into the order of effects because of the nature of the study design, but the gender focus of this study does raise the possibility that the causal order of effects could differ by gender. That is to say, it is possible that women's exposure to strain increases levels of depressive symptoms which then leads to crime, while for men, strain exposure may lead to crime which later increases depression. Overall, it seems that a positive relationship between strain, negative emotions, and crime makes intuitive sense.

In sum, the complex processes underlying the relationships of negative affective states such as depression (distress) with crime and other deviant behaviors are not yet well understood. At this point we may not be any closer to understanding why women are more likely to experience psychological difficulties, but less likely (than men) to

commit crime despite evidence (Mirowsky and Ross, 2003; and the current study) that the two are positively associated.

What the current study does show is that it must not be taken for granted that negative emotions or depressive symptoms decrease criminality in women or that psychological issues are only associated with self-directed deviance. Most previous work has not been able to include such a wide array of criminal offenses, others have tended to use criminally inactive samples of college students; it is possible that the negative association of negative emotions or alternately the lack of relationships with crime found among women in those studies may have been due in part to these limitations.

Race and ethnicity

In addition to the intriguing directional finding involving the positive relation of negative emotions on crime, important racial and ethnic differences were discovered with respect to the influences of anger, negative emotions, and job stability on criminal behavior.

First, with respect to anger and negative emotion, the results of this study indicate that for both white and non-white women there is a positive direct effect of strain on crime, but among white women, the effect of strain disappears

once both anger and negative emotion are added to the model. This suggests that for white women, a combination of anger and other negative emotions mediates the relationship between strain and crime. Conversely, no direct relationship was found between strain and anger or negative emotion for non-white women, therefore, no mediating effects of anger or negative emotion were found between strain and criminal behavior among non-white women. Further inspection of the models involving white women indicated that only a *complex* mediating effect involving the *combination* of anger and negative emotions could eclipse the effect of strain on crime and that neither anger nor negative emotion alone was able to produce a total mediating effect. This finding for white women is in partial agreement with Sharp et al.'s (2001, 2005) research suggesting a complex relationship between emotional responses to strain and criminal behavior. Specifically, Sharp found that purging behaviors increased when a female's anger is high and depression is low. However, other research by Sharp found that although males and females respond to strain with anger, females also reacted to strain with other negative emotional responses; these other negative emotions were negatively related to criminal behavior. The findings in the current study, in tandem with Sharp's claims, suggest combinations of

emotions may contain crucial insights for understanding crime and deviance among women and is an important direction for future research.

Racial and ethnic differences in the causal processes and in the capacities of the models to predict criminal behavior shown in this research have potential to be explained in various ways. For example, support for differing causal mechanisms is found in the work of Hill and Crawford (1990) who found evidence that white and African American female criminality is explained through different clusters of variables. The clusters, representing various theoretical explanations, suggested that different causal processes were at work. They showed that, while crime committed by African American women was related to structural factors such as neighborhood, for white women, crime was explained by psychosocial factors such as low self-esteem. Hill and Crawford (1990) argue that differences in causal models reflect the unique position held by African American women in the structure of power relations in society. Although they do not elaborate on the meaning of "unique position," one is left to conclude that they are referring to the strong leadership position of African American women in both family and community. Thus, it is difficult to speculate why the model

in the current study does not operate well for both groups, but it is clear that the criminal behavior of the non-white group is not well specified by this model. Differences may result from the fact that structural indicators are not well represented, but psychological factors are.

Another potential reason for the racial/ethnic differences in this study may be due to the specific strains used to make up the cumulative measure. Even though these strains were assumed to represent traumatic events and therefore able to characterize an adequate cross-section of "objective strain," it is possible that the measure fell short of achieving this. If a greater number and variety of strains had been used, it may have influenced the results by capturing events that were likely to occur among larger numbers of women, thus producing different results. Moreover, different strains may have the potential to lead to more anger and negative emotions in some groups than in others, or to different coping responses to the experiences (Agnew, 2001; Hill and Crawford, 1990; Mabry and Kiecolt, 2005). Separate examination of each indicator of strain may also have had different implications for the findings by race within gender. For instance, homelessness may have a greater effect on non-white women since it can be considered a structural factor, while having been a victim of

assault may have greater psychological implications and thus have a greater effect on white women. Separate evaluation of each traumatic strain indicator is important for future research to determine if specific strains may reveal different causal pathways according to race and ethnicity.

The way in which anger and negative emotion were measured in this study may have also influenced the racial/ethnic outcome. Previous research concerning the relationships between race and anger thus far have produced inconsistent results, perhaps because of differences in measures of anger and differences in groups (e.g. African American versus non-white) used across studies (Mabry and Kiecolt, 2005). The anger variable used in this study measured only trait anger; inclusion of a measure of situational anger may have influenced the results by creating a situation of no difference between white and non-white women. This would have been consistent with some research that shows no racial differences in experienced or proneness to anger (Schieman, 1999; Turner et al. 2007). Conversely, the racial and ethnic difference found in this study may support research that suggests racial/ethnic differences in anger do exist. For instance, Mabry and Kiecolt (2005) argue that "sense of control"- the belief that one can control one's destiny, has

greater impact in reducing feelings and expressions of anger for African Americans than for whites. Perhaps the non-white women in this sample felt less helpless when faced with strain than did their white counterparts, this might explain the lack of an anger effect among non-whites and the large effect among whites. Moreover, sense of control is negatively related to depression (Mirowsky and Ross, 2003) which could help explain why these strains did not appear to create negative emotions for non-white women, but did so for the white women. The results of this study with respect to negative emotion and non-whites is consistent with past research showing African Americans have lower rates of depression, affective disorders, and comorbidity than do whites (Kessler et al. 1994; Williams, Takeuchi, and Adair 1992). Further research needs to be done to explore the possible buffering effects of sense of control on anger, negative emotion and consequently their impact on criminal outcomes according to race and ethnicity to determine if moderating effects exist.

Racial and ethnic differences in emotional reactions to strain may also be explained in terms of attribution theory (Heider 1944, 1958). Perhaps when white women are faced with strain, they make dispositional attributions, causing them to blame themselves instead of external factors, in turn causing

them to become angry and depressed. Conversely, when non-white women are faced with strain, they make situational attributions, causing them to place blame on their environment rather than on themselves, thereby enabling them to avert negative emotions and anger.

Finally, the differences between white and non-white women found in this study may represent differences in reporting styles rather than differences in causal processes. For instance, it might be that the non-white women were less comfortable, reporting their anger and negative emotions to interviewers than their white counter-parts. Emotional status at the time of the interview may have also biased reporting. For example, the non-white women may have been experiencing low levels of anger and negative emotions at the time of the interview, which would have increased the likelihood of under-reporting past instances of anger and negative emotion. Conversely, white women may have been experiencing high levels of anger and negative emotions at the time of the interview, therefore increasing the likelihood of over-reporting of past instances of anger and negative emotional states. Along with the possible problems involving recall and telescoping, there is still much to be learned about cultural differences in

reporting of emotion (Aquilino and LoSciuto, 1990; Schuman and Presser, 1996; Javeline, 1999).

In addition to the findings involving anger and negative emotions, another important difference was found involving race and ethnicity. White women showed an increased likelihood of criminal conduct when their job stability (social control) was low, while no such relationship was apparent for the non-white women. Historically, minorities have been faced with much greater discrimination and adversity in the workplace than have whites. One possible explanation for the difference in effects is that non-white women may view employment problems as just one additional hardship and therefore do not experience pressures to react. Conversely, white women may view their job instability as a highly volatile condition that calls for reactionary measures, which might include criminal behavior. These differences may also be explained with attribution theory (Heider, 1944, 1958); non-white women may view job instability as characteristic of the flawed social structure and therefore feel it is useless to react, while white women may view job instability as a personal flaw that demands reaction.

Overall, the results of this study show that regardless of the presence of a mediating mechanism or an effect of job

stability, the effect of strain on criminal involvement is present for both non-white and white women. This direct effect may be explained by an individual's tendency to develop social meaning from personal life experiences. Events of strain shape how we interpret our interactions with other individuals, and our perceptions of events, which in turn drives our behaviors. Intense strain can revise our understanding of right and wrong, our ideas about what is fair, and in extreme cases, it can pervert our understanding of social rules. In a case study examining the life experiences and deviance of one biracial girl, Robinson (2007) reminds us of how traumatic events can be a powerful force in shaping our destinies. There is no reason to believe that we are not similarly affected in adulthood. It is easy to imagine how the strains used in this study might easily cause a woman to reinterpret her understanding of social rules and reduce her ability to engage in healthy coping if for no other reason than survival.

Treatment Type

The focus of this study was not to examine the effects of substance abuse treatment, but since all of the women in the sample attended treatment, the effects of "treatment type"

were also considered. Models were tested to address the possibility that individual characteristics may have determined the type of treatment (in-patient versus outpatient) the women received, and the possibility that different treatment types may have been better (or worse), ultimately affecting criminal behaviors.

With respect to individual characteristics, none of the independent variables in the models could do more than predict with marginal significance whether the women in the sample attended in-patient or outpatient treatment centers for their substance abuse rehabilitation. This finding suggests that, at least for the variables tested, effectively no statistically significant differences existed in the likelihood of selection into treatment type. Further assessment to determine whether type of treatment influenced the likelihood of criminal behavior presented no significant treatment-type effect. Furthermore, the addition of the treatment type variable had little if any effects on the other independent variables in the model.

Explanations for the lack of effect may be summed up by reasoning that individuals are not selected into in-patient or out-patient facilities with respect to their personal characteristics, instead people go to (or are sent to)

treatment centers that are the most convenient geographically, regardless of facility type. Few individuals have the resources to choose what type of treatment center they would like to attend. Factors that may contribute to the location of a particular type of treatment facility might depend on the prevalence of certain drugs used in the area. For example, if heroin addiction is prevalent in a particular city, there may be a greater number of outpatient facilities in the area since methadone clinics tend to offer outpatient treatment.

The reasons why the type of treatment did not influence criminal behavior are unknown. It is possible that these programs place most of their focus on living life sober and less on abstaining from criminal conduct. This study removed drug and alcohol offenses from the measure of crime; had they been included, the results may have differed. Another possibility is that differences in in-patient outpatient treatment do not correspond to treatment quality.

Limitations and Sample

It is important to acknowledge that the results of the analyses might have been affected by limitations inherent in the data and design. First, because the data were collected retrospectively, in a single interview, for a period covering

ten years, the design is essentially cross-sectional. Because of this, some of the time order of events and the relationships between variables remain unclear. Because the interview covered such a vast expanse of time, and due to the problems associated with recall and emotions, this study was limited to placing its primary focus on the time-period after treatment. One might imagine that the nature of the interview and study design encourages the respondents to engage in socially desirable responses that minimize after treatment events and emotions. As a result, one could assume that respondents represented their after treatment situations as "better" than before they were treated, suggesting that the measures at Time 2 are conservative estimates of the measures.

Second, the data were lacking measures of personal resources such as self-esteem. Although some General Strain Theory research has been unable to show that these effects buffer the effect of strain on crime, there is still no consensus and therefore, optimally, personal resources should be included. Some findings in this study might be interpreted in tandem with Mabry and Kiecolt's (2005) research on anger to suggest that personal resources such as "sense of control" might be crucial for uncovering racial and ethnic differences in pathways to crime.

Third, the data lacked measures of unconventional peers and intimates that might have indicated some sort of social learning of deviance had taken place. Previous research has shown that females who are intimately involved with individuals who are offenders may have a greater tendency to offend (Simons, Stewart, Gordon, Conger & Elder, 2002). The marriage variable in this study was limited; it measured only marital status, not the conventionality of the spouse or the quality of the marriage.

Fourth, the measure of anger used in this study was generated from a single item that measured only trait anger. Multiple item measures of situational and trait anger would have been preferred, and would have greatly increased the validity of these findings. Finally, the measure for strain clearly could not capture all of the possible exposures to strain that might necessarily be important for women, but it did cover some not previously covered, in addition to examining all three potential sources of strain (i.e. exposure to negative stimuli, removal of positive stimuli and failure to achieve positively valued goals). Therefore, the measure of strain used here may be considered a conservative indicator of strain.

Had these data been collected in such a way as to optimize testing of General Strain Theory, they would have been collected at several points in time, with relatively short duration between measurements (one year or less). It would have included a life-event inventory with many more items than were provided in the current study with both standard life event checklists (e.g. deaths, moving) and items of specific importance to women, similar to the ones demonstrated in this study. Moreover, better mental health measures would have been included. Standard multi-item measures of trait and situational anger as well as a depression diagnosis or a distress continuum would increase the validity of the findings.

In spite of the fact that the measures were not specifically designed to capture the concepts in General Strain Theory, these data do offer an extraordinary array of different criminal acts perpetrated by adult women; an uncommon feature of most crime data not collected behind prison walls. This national sample of substance abuse treatment clients provided an ideal opportunity to obtain usable crime data from a non-prison population. Criminologists might consider substance abuse treatment

clients as an additional data resource, especially since crime and substance abuse commonly co-occur.

Another positive feature of the sample used in this study is its large number of non-white women. Some official data sources do not provide a breakdown of gender by race data (Hill and Crawford, 1990), thus researchers must rely on self-report data, such as those used here, to obtain gender by race crime data. Hill and Crawford (1990) report additional problems with crime research involving gender and race. For instance, they suggest that there has been a "general disinclination" to study the criminality of African American females due to reasons of political sensitivity (Simpson, 1989), but also because theoretical explanations of female criminality have not been able to provide explanation that "ring true" for African American women (Lewis, 1981).

A possible drawback of the sample is that it does not adequately represent women who are not substance abusers, and those who did not, or could not, go to treatment. All of the women in this sample represent a group who must have had some combination of time, inclination/court order, money/community resources/health insurance, and geographic availability of services to attend treatment. It is difficult to ascertain in what ways the women in this study differ in criminal

tendencies from women without substance abuse problems or from women who did not attend treatment. The ideal situation would have been to include a criminally active group of non-substance abusers, and a group of substance abusers who did not attend treatment for comparison with the current sample. Groups could have been matched on characteristics like age, race, ethnicity, and education.

In short, the main weakness of the dataset is attributable to the fact that these data were not collected specifically for the purposes of testing the propositions of strain theory; they were collected for the purposes of determining whether substance abusers released from treatment stayed sober. Despite this, however, testing General Strain Theory using secondary data can be viewed as a strength, instead of a weakness, since this data provided a completely unassuming glimpse at the workings of strain and how it can affect the offending patterns of women.

As with this study, much of the previous research on GST has been limited by missing measures. Although some studies have had the resources and funding to design and implement surveys to test the theory more fully, the subjects have often been criminally inactive, college students, or samples of institutionalized juvenile delinquents. Despite the fact that

it lacked measures of personal resources, and some variables were somewhat less than optimal, this dataset was able to capture characteristics that are not represented in General Strain Theory research: criminally active, adult women.

Implications for Public Policy

Public policies sponsoring programs that help drug and alcohol addicted women with crisis management might be one way to reduce the criminal activities of this population. Community based programs that link substance abuse treatment centers with mental health services might be effective in providing such on-going support. The programs would be designed to address specific needs of women (and their children) by helping to lessen the impact of major strains when they occur, through counseling, links to social service agencies and other community programs and shelters.

It must not be overlooked that differences across racial and ethnic groups in stressful life conditions are sometimes substantial (Takeuchi et al. 1999). Variations in levels of poverty, emotional trauma, discrimination, and social role strains can be large and therefore may warrant special attention when planning effective services for women. Services and programs that assume uniformity of cultural

values and beliefs among women have the potential to overlook critical issues of power, oppression, mental illness, and discrimination that may differ according to race and ethnicity and within community. The social stigma associated with accessing certain services may also differ according to race and ethnicity. Therefore, there may be the potential for conflicts between overarching multicultural service goals and differences in the needs, and willingness to access services (Takeuchi et al. 1999). Other factors that further complicate initiatives to provide effective services for women involve limited availability of services and service funding.

The chaos that affects the lives of high-risk, chemically dependent and marginalized women through associations with continued drug use, homelessness, violent victimization, family disruption, health issues (both mental as well as physical) is apparent. It is probably safe to say that these women's lives are potentially chaotic physically, psychologically, and socially most of the time. Bridging services is necessary to provide women with the support systems they need, and to increase awareness of services available to them. For example, recent research on homelessness finds that women who are raped or otherwise victimized while living on the streets also tend to be

substance abusers (Wenzel, Koegel and Gelberg, 2000; Wenzel, Leake and Gelberg, 2000). When women seek help from hospitals or other healthcare facilities for rape, clinicians might include drug screening as a way to divert these women into substance abuse treatment facilities (Wenzel, Koegel, and Gelberg, 2000). Treatment might be a first step to link women with additional services that can help them.

In Conclusion

The results of this study lend support to the contention that particular indicators of strain may be necessarily important for specific groups (Agnew, 2001). The results also indicate that in addition to the effects of anger, other negative emotions are crucial to the development of strain theory, and that several emotions may interact or otherwise combine in complex ways to produce criminal outcomes. Moreover, the results of this study uncovered evidence that the effects of anger and emotional affect may differ according to race and ethnicity. The models presented in this study worked considerably better and explained much more variance for the white women than for the non-white women. Just as feminists have argued that gender should not be overlooked in the study of crime, this research shows that race and

ethnicity cannot be treated as a non-issue, and it must not be assumed that the experiences of white and non-white women are the same.

A major problem of crime theory is that the experiences of men are considered the norm, and may be generalized to all. This study shows that the generalizability problem of traditional crime theories to samples of females transcends providing separate analyses by gender. The generalizability problem of traditional theories of crime must be extended to race and ethnicity as well. These results correspond with what feminist scholars have long proposed; that intersections gender, race, and class are important. It is clear that a great deal more work needs to be done with GST to establish whether different mechanisms link strain and crime according to race and ethnicity.

The findings from this study also reaffirms the critical importance of designing studies with all female samples to assess women's crime, or at the very least to test and present analyses for women and men separately. Had this research included a male sample and used gender as a control, some of the critical differences between women may have been missed.

It is also essential to recognize that, although new theory development that explains female criminality is essential,

researchers should not underestimate what may be learned from traditional theories of crime. This research shows that traditional theory still holds promise for gaining insight into female criminal behavior. Overall, revising traditional variables in ways that can better represent the lives of women may serve as a starting point for new ideas in theory development.

APPENDIX A

Correlations

Age Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
White Non-Hispanic	.081															
Married T1	.069	.173 **														
Married T2	-.047	.199 **	.306 **													
Education	.151 **	.166 **	.062	.009												
Prior Arrest	.096	.004	.019	-.022	-.195 **											
Drug/Alcohol T2	-.063	-.071	-.036	-.037	-.043	.092										
High Job Stability T1	.048	.164 **	.064	.026	.297 **	-.173 **	-.068									
High Job Stability T2	-.033	.204 **	.033	.105 *	.257 **	-.175 **	-.083	.374 **								
Strain T1	-.082	.084	-.037	.025	-.137 **	.191 **	.035	-.141 **	-.133 *							
Strain T2	-.130 **	-.008	-.054	-.113 *	-.067	.073	.114 *	.020	-.144 **	.367 **						
Neg Emotions T1	.023	.229 **	.099	.046	-.095	.109 *	.078	-.098	-.032	.366 **	.154 **					
Neg Emotions T2	-.025	.097	.061	-.044	-.048	.116 *	.089	-.128 *	-.134 **	.343 **	.340 **	.586 **				
Neg Emotions Binary T2	-.040	.104 *	.089	-.078	-.099 *	.139 **	.064	-.108 *	-.156 **	.246 **	.258 **	.433 **	.723 **			
Angry T1	-.023	.066	.046	.053	-.091	.121 *	-.020	-.071	.013	.158 **	.110 *	.258 **	.161 **	.117 *		
Angry T2	-.084	-.089	.004	-.050	-.111 *	.092	.097	-.014	-.039	.083	.221 **	.210 **	.244 **	.183 **	.520 **	
In-Patient Treatment	-.042	-.095	-.080	.001	.043	-.055	-.045	.007	-.025	-.056	.055	-.025	-.041	-.062	.082	.015

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

APPENDIX B

DEMOGRAPHICS

What race do you consider yourself? White, Black or African American, Asian or Pacific Islander, Alaskan Native, Native American or American Indian, Other.

Are you of Mexican, Puerto Rican or any other Spanish-speaking background? Y/N

What is the highest grade or year of school have you ever completed and gotten credit for?

Are you currently married?

When you first entered the treatment program were you married?

STRAIN

Family Disruption/Child Custody

Now, I would like to ask you about any children you have or you have raised, including your natural children, stepchildren, foster children or adopted children.

Have you ever lost custody of any of your natural children under 18 years old, or any other children you were raising?
Y/N

Thinking about the time five years before treatment (start date), did you lose custody of any of your natural children under 18 years old or any other children you were raising?
Y/N or gave up custody to go to treatment

After treatment (end date) and until now, have you lost custody of any of your natural children under 18 years old or any other children you were raising? Y/N or gave up custody to go to treatment

Homelessness

Thinking about the five years before you went to treatment in (start date) did you, for at least two nights in a row, have no place to stay except for a homeless shelter or being on the street? Y/N

After you left treatment in (end date) and until now, have you, for at least two nights in a row, had no place to stay except for a homeless shelter or being on the street? Y/N

Physical Abuse

The next questions are about times you may have been attacked with a weapon, or seriously hit or beaten.

Have you ever been attacked with a weapon or seriously hit or beaten?

In the five years before you went to treatment in (start date) had you been attacked with a weapon, or seriously hit or beaten?

After you left treatment in (end date) have you been attacked with a weapon, or seriously hit or beaten?

AIDS Diagnosis

Have you ever had a blood test for the AIDS virus? Y/N

In the five years before you went to (program) in (start date) did you have a blood test for the AIDS virus? Y/N

Did you know the results of the last test? Y/N/Results
Positive, Results Negative.

After you left (program) in (end month) and until now, have you had a blood test for the AIDS virus? Y/N

Do you know the result of the test? Y/N/Results
positive/Negative.

Female Illness

I'm going to read a list of illnesses, conditions and injuries, for each one please tell me if you have ever had the illness, condition or injury.

Have you ever had any problems with miscarriage, toxemia, abnormal pap smear, or any other serious female condition?

In the five years before (start date) did you, even if one time, see a doctor about the (stated female medical problem)?

After (end date) did you, even if one time, see a doctor about (stated female medical problem)?

NEGATIVE AFFECT**Negative Emotions**

Next, I would like to ask you about problems you may have had with your emotions, nerves, or your mental health.

Have you ever had at least two weeks when you felt very sad, blue, or depressed, and you lost interest or pleasure in things you usually cared about? Y/N

In the five years before you went to treatment in (start date) did you have at least two weeks when you felt very sad, blue or depressed, and you lost interest or pleasure in things you usually cared about? Y/N

After you left treatment in (end date) and until now, have you had at least two weeks when you felt very sad, blue or depressed, and you lost interest or pleasure in things you usually cared about?

Have you ever attempted suicide? Y/N

In the five years before you went to treatment in (start date) did you attempt suicide? Y/N

After you left treatment in (end date), have you attempted suicide?

Have you ever seen a doctor, nurse, counselor, or social worker for problems with your emotions, nerves or mental health? Y/N

In the five years before you went to (program) in (start date) did you see a doctor, nurse, counselor or social worker for problems with your emotions, nerves, or mental health? Y/N

After you left (program) in (end date) and until now, have you seen a doctor, nurse or counselor or social worker for your problems with your emotions, nerves or mental health?

Have you ever stayed overnight in a hospital or clinic for treatment of your emotions, nerves or mental health, that wasn't a result of your drug or alcohol use? Y/N

In the five years before you went to (program) in (start date) did you stay overnight in a hospital or clinic for treatment of your emotions, nerves, or mental health that wasn't the result of your alcohol or drug use? Y/N

After you left (program) in (end date) until now, have you stayed overnight in a hospital or clinic for treatment of your emotions, nerves or mental health, that wasn't the result of your alcohol or drug use? Y/N

Anger

Have you ever had trouble controlling your temper so that you behaved violently? Y/N

In the five years before you went to treatment in (start date) how often did you have trouble controlling your temper so that you behaved violently—would you say often, sometimes, rarely, or never?

After you left treatment in (end date) and until now, how often have you had trouble controlling your temper so that you behaved violently— would you say often, sometimes, rarely or never?

INFORMAL BONDS -SOCIAL CONTROL**Job Stability**

Have you ever been employed full-time, that is, have you worked at a job 35 hours or more a week? Please do not count any job that involved illegal activity. Y/N/Currently has full-time job.

Looking at the calendar, in the five years before you went to (program) in (start date), at any time were you employed full-time? That is were you working or had you worked 35 hours or more a week at any job? Y/N

In the five years before (start date), what was the longest time you had any one full-time job where you worked 35 hours or more a week? Less than one year, 1-2 years, 3-4 years, 5 years or more.

In the five years before (start data), altogether, how many years did you work at full-time jobs where you worked 35 hours or more a week? Less than one year, 1-2 years, 3-4 years, 5 years or more.

After you left (program) in (end date) and until now, have you been employed full-time, that is are you working or have you worked 35 hours or more a week at any job? Y/N/Currently has full-time job.

After (end date) and until now, what has been the longest time you have had any one full-time job where you worked 35 hours a week or more? Less than one year, 1-2 years, 3-4 years, 5 years or more.

After (end date) and until now, altogether, how many years have you worked 35 hours or more a week? Less than one year, 1-2 years, 3-4 years, 5 years or more.

CRIMINAL BEHAVIOR

Did you ever **steal a vehicle** between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, did you ever steal a vehicle?

Did you ever commit any kind of **public order offenses**, such as fighting, disorderly conduct, or vandalism between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, have you ever committed any kind of public disorder offenses, such as fighting, disorderly conduct, or vandalism?

Did you ever have sex for money or drugs (**prostitution**) or asked others to have sex for money or drugs (procurement) between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, have you ever had sex for money or drugs (prostitution) or asked others to have sex for money or drugs (procurement)?

Did you ever pass bad checks, use a stolen credit card, or do any other kind of **fraud or forgery** between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, have you ever passed bad checks, forged checks, used a stolen credit card, or done any other kind of fraud or forgery?

Did you ever **shoplift** (boost) or commit any other kind of theft, such as **larceny** or selling (**fencing**) stolen goods between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, have you ever shoplifted (boosted) or committed any other kind of theft, such as larceny or selling (fencing) stolen goods?

Did you ever **break into a house, a business, or a vehicle** to take someone else's money or property between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, have you ever broken into a home, a business, or a vehicle to take someone else's money or property?

Did you ever use a weapon or physical force against someone to steal money or property (**robbery**) from them between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, have you ever used a weapon or physical force against someone to steal money or property from them?

Did you ever **set fire to a house, building, or vehicle** between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, have you ever set fire to a house, building, or vehicle?

Did you ever **threaten or attack someone with a weapon** between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, have you ever threatened or attacked someone with a weapon?

Did you ever force someone to have sex (**rape**) or do any kind of sex act against their will between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, have you ever forced someone to have sex or do any kind of sex act against their will?

Did you ever **kill someone**, other than by accident between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, have you ever killed someone, other than by accident?

Did you ever **violate parole, probation** or any other kind of supervision between (date 5 years before) and (start date) when you went to (program)?

After you left (program) in (end date) until now, have you ever violated parole, probation or any other kind of supervision?

TREATMENT TYPE

Was the treatment or help you received at (program) inpatient, residential, outpatient non-methadone, methadone or something else?

APPENDIX C

Formulas for calculating direct, indirect and total effects:

$$\text{Mediating effect} = \alpha\beta$$

$$\text{Total effect} = \alpha\beta + \tau$$

$$\text{Direct effect} = \tau$$

Formula to calculate the standard error for the estimate:

$$\text{Estimate } \sigma_{\alpha\beta}^2 = \alpha^2\sigma_{\beta}^2 + \beta^2\sigma_{\alpha}^2 + \sigma_{\alpha}\sigma_{\beta}$$

Z score:

$$Z = \alpha\beta / (\alpha^2\sigma_{\beta}^2 + \beta^2\sigma_{\alpha}^2)^{-1/2}$$

APPENDIX D

Descriptive Statistics for Crime Dependent Variable

	% Affirmative	Mean	Std. Dev.	Min	Max	N
Motor Vehicle Theft						
Before	2.5	.025	.157	0	1	396
After	3	.030	.172	0	1	396
Ever	6.3	.063	.244	0	1	396
Public Order Crime						
Before	19.7	.197	.398	0	1	396
After	13.7	.137	.344	0	1	394
Ever	29.6	.296	.457	0	1	396
Prostitution/Procurement						
Before	24.4	.244	.430	0	1	394
After	16.2	.162	.369	0	1	394
Ever	32.7	.327	.470	0	1	394
Fraud/Forgery						
Before	19.7	.197	.398	0	1	396
After	11.9	.119	.324	0	1	396
Ever	31.1	.311	.463	0	1	396
Larceny						
Before	28	.280	.450	0	1	396
After	17.8	.178	.383	0	1	394
Ever	42.2	.422	.495	0	1	396
Breaking & Entering						
Before	7.8	.078	.269	0	1	396
After	5.3	.053	.224	0	1	396
Ever	12.6	.126	.333	0	1	396
Robbery						
Before	1.5	.015	.122	0	1	396
After	1.5	.015	.122	0	1	396
Ever	3	.030	.172	0	1	396
Arson						
Before	0.5	.005	.071	0	1	395
After	0.5	.005	.071	0	1	395
Ever	2.5	.025	.157	0	1	395
Assault w/Weapon						
Before	10.4	.104	.305	0	1	395
After	7.8	.078	.269	0	1	395
Ever	16.7	.167	.374	0	1	395
Rape						
Before	0	.000	.000	0	0	396
After	0.3	.003	.050	0	1	396
Ever	0.8	.008	.087	0	1	396
Murder						
Before	0.5	.005	.071	0	1	395
After	0	.000	.000	0	0	395
Ever	1	.010	.100	0	1	395
Parole/Probation Violation						
Before	13.2	.132	.339	0	1	394
After	14.8	.148	.355	0	1	393
Ever	25.3	.253	.435	0	1	396

APPENDIX EStrain DescriptivesAffirmative Responses N = 396

	<u>Before Treatment</u>	<u>After Treatment</u>
Lost Custody of Children	17.2%	10.1%
Homeless	22.0%	13.6%
Abused or Beaten	37.4%	23.5%
Female Medical Problem	26.5%	25.5%
Positive AIDS Diagnosis	1.5%	3.5%

Event Count for N = 396 Respondents

	<u>Before Treatment</u>	<u>After Treatment</u>
No Events	144	188
One Event	123	142
Two Events	100	44
Three Events	25	16
Four Events	4	6
Five Events	0	0

APPENDIX F

		Odds Ratios: Specific Crime by Specific Strain	
	Parole Probation Violation	2.300 *	2.993 *
	Murder	nr	nr
	Rape	nr	nr
	Assault w/Weapon	.508	2.390
	Arson	4.894	8.923
	Robbery	nr	1.769
	Breaking and Entering	1.157	1.495
	Larceny	1.392	1.936
	Fraud/Forgery	.871	3.308 *
	Prostitution Procurement	1.674	3.750 *
	Public Order Crime	1.742	3.209 *
	Motor Vehicle Theft	1.197	3.072
Lost Custody			
Before		1.197	3.072
After		3.072	1.197
Homeless			
Before		8.925 *	4.883 *
After		4.883 *	8.925 *
Abused/Beaten			
Before		7.000 *	3.391 *
After		3.391 *	7.000 *
F Medical Problem			
Before		.672	1.454
After		1.454	.672
HIV Diagnosis			
Before		nr	nr
After		nr	nr

Note: Odds ratios that did not include "1" in the 95% confidence interval are marked statistically significant with asterisks

Note: "nr" denotes instances for which "no ratio" was generated because zero cells were found at either one variable level or both.

APPENDIX G

Descriptives for Specific Strains, Job Stability, Anger, Negative Emotions, and Crime By Race/Ethnicity											
	Non-White					White					
	Mean	Std Dev	Min	Max	N	Mean	Std Dev	Min	Max	N	
Lost Custody											
Before	.175	.382	0	1	171	.164	.372	0	1	219	
After	.117	.322	0	1	171	.092	.290	0	1	217	
Homeless											
Before	.197	.399	0	1	173	.240	.428	0	1	221	
After	.150	.358	0	1	173	.127	.333	0	1	221	
Beaten/Abused											
Before	.308	.463	0	1	172	.425	.496	0	1	221	
After	.269	.445	0	1	171	.213	.410	0	1	221	
F Medical Problem											
Before	.240	.428	0	1	171	.290	.455	0	1	217	
After	.187	.391	0	1	171	.317	.466	0	1	218	
Positive HIV Diagnosis											
Before	.036	.186	0	1	168	.000	.000	0	0	218	
After	.060	.237	0	1	168	.018	.135	0	1	218	
High Job Stability											
Before	.250	.434	0	1	168	.406	.492	0	1	219	
After	.180	.386	0	1	161	.365	.483	0	1	208	
Angry											
Before	.278	.449	0	1	173	.339	.475	0	1	221	
After	.260	.440	0	1	173	.186	.390	0	1	220	
Negative Emotions											
Before	1.111	1.034	0	4	172	1.644	1.197	0	4	219	
After	1.326	1.154	0	4	172	1.551	1.136	0	4	218	
Committed Crime											
Before	.547	.499	0	1	170	.605	.490	0	1	220	
After	.455	.500	0	1	167	.395	.490	0	1	218	

Note: 1 = Yes, 0 = No Negative Emotion variable range 0-4

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