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**Richard B. Felson, D. Wayne Osgood,  
Julie Horney & Craig Wiernik**

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## Having a Bad Month: General Versus Specific Effects of Stress on Crime

Richard B. Felson · D. Wayne Osgood ·  
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**Abstract** We examine whether particular types of stress are related to particular types of crime or whether all types of stress are related to all types of crime. Our estimates are based on analyses of within-individual change over a 36 month period among recently incarcerated offenders. We find that assault is most strongly related to family stress, suggesting that conflicts between family members lead to assault. Economic crimes (property crimes and selling illicit drugs) are most clearly related to financial stress, suggesting that these crimes often reflect attempts to resolve financial problems. On the other hand, crime is generally unrelated to stress from illness/injury, death, and work. The results support the idea that criminal behavior is a focused response to specific types of problems rather than a general response to stress. They are more consistent with explanations that focus on perceived rewards and costs (e.g., the rational-choice approach) than with explanations that portray negative affect as a generalized impetus toward violence or crime (e.g., frustration aggression approaches).

**Keywords** Crime · Violence · Stress · Rational choice · Instrumental aggression

### Introduction

Offenders have difficult lives. For example, they are more likely to suffer health problems, more likely to have family troubles, more likely to be crime victims, and more likely to experience difficulties at work (e.g., Robins 1966; Massoglia 2008). Theories differ sharply in their accounts of the connection between crime and negative experiences. For theories that emphasize stable individual differences as the cause of crime, the relationship between crime and suffering is spurious. According to Gottfredson and Hirschi (1990), for instance, low self-control leads offenders to engage in behaviors that are costly in the long run. In contrast, the connection between crime and life difficulties is at the heart of theories that

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R. B. Felson (✉) · D. W. Osgood · J. Horney · C. Wiernik  
Department of Sociology, Pennsylvania State University,  
211 Oswald Tower, University Park, PA 16802, USA  
e-mail: rbf7@psu.edu

explain crime as motivated by internal emotional processes, for those difficulties create the essential impetus toward crime. In this vein, proponents of frustration-aggression approaches and general strain theory view negative life experiences as producing the negative affect that motivates criminal behavior (e.g., Berkowitz 1989; Agnew 1992). For theories that treat crime as a response to perceived rewards and costs, however, the idea that a general emotional state motivates crime is problematic. Instead, any causal effect of negative experiences on crime would have to follow from a more specific path in which those experiences alter offenders' views of the balance of desirable versus unappealing consequences for a particular criminal act. In the present study we seek to advance understanding of the connection between life difficulties and crime by examining the pattern of relationships between multiple types of stress and multiple types of crime.

Much of the literature on negative experiences and crime focuses on the role of stress, a well-known correlate of criminal behavior (e.g., Mueller 1983; Starr 1988; Straus 1980; Baron 2004; Piquero and Sealock 2000, 2004; Hoffman and Cerbone 1999). A few studies have sought to isolate the causal impact of stress on crime and delinquency through statistical models that examine the relationship between life stresses at time 1 and offending at time 2, controlling for offending at time 1 (e.g., Felson 1992; Agnew and White 1992; Paternoster and Mazerolle 1994). The results have been mixed. In addition the value of these longitudinal studies for clarifying the causal relationship is limited because the statistical approach does not fully control for preexisting differences between respondents who are subject to higher and lower levels of stress (Allison 1990; Winship and Morgan 1999). Furthermore, these studies have involved time lags of a year or more, when the relevant theories primarily concern effects of stress that should be more proximate in time. For instance, frustration-aggression approaches emphasize the immediate effects of aversive stimuli, and claim to demonstrate them with data from laboratory experiments (see below). Also, research on stress shows that recent events have greater effects than earlier events (e.g., Avison and Turner 1988). Based on such findings, Agnew (1992) argued that strain would have relatively immediate effects on crime (see also Slocum et al. 2005).

Methods that examine within-individual change are more appropriate for studying such contemporaneous effects (Horney et al. 1995). These techniques more adequately address selection because they control for all stable individual differences, whether measured or not (Johnson 1995; Allison 2005). Thus, they rule out the possibility that stress and crime are correlated because the type of people who commit crime are also more likely to experience stress. For example, they address Gottfredson and Hirschi's argument that individual differences in the stable trait of self-control produce a spurious relationship between stress and crime.

Slocum et al. (2005) applied a within-individual analysis to study the relationship between stress and offending in a sample of incarcerated women. With all between-individual differences effectively controlled, they were able to show that the same person is more likely to offend when subject to unusual stress than when such stress is not present, thus providing an important counter to the Gottfredson and Hirschi claim that any effects of stress are spurious. The current study builds on the work of Slocum and her colleagues, similarly examining within-individual reactions to stress. We go beyond their work by asking whether the response to stress is general or specific. More directly, we ask whether the type of crime committed can be predicted based on the nature of the stress that a person is undergoing.

## Explanations of the Relationship Between Stress and Crime

We consider three different theoretical explanations for why stress should be associated with crime. We first discuss frustration-aggression approaches, the theoretical perspective most commonly used in psychology to explain stress effects. Second we consider General Strain Theory (Agnew 2006a, b), the theory most typically used to explain stress effects in criminology. Finally we discuss how a rational choice perspective might view crime as an instrumental response to stress. Though this perspective has been widely influential, it is not often used to explain effects of stress.

### Frustration-Aggression Approaches

The longest-standing theoretical interpretation of the relationship between stress and violence is the frustration-aggression hypothesis (Dollard et al. 1939). According to the most recent and most influential version of the theory, aversive stimuli cause a person to experience negative affect, which instigates “reactive” or “expressive aggression” (Berkowitz 1989). In simple terms, people harm others because they feel bad. They lash out after experiencing stress, pain, failure, depression, anxiety, or suffering of any sort, although they sometimes inhibit themselves because of anticipated costs or moral beliefs. If inhibitory factors are strong, they may displace their aggression onto third parties not associated with the aversive stimuli.

The link between aversive stimuli and negative affect is obvious: people feel bad when bad things happen to them. More controversially, Berkowitz claimed that negative affect inevitably leads to an aggressive impulse. He claimed that the link is biological and is present among many animals in the form of reflex fighting. Negative affect does not always lead to overt human aggression, however, because of the inhibitory factors mentioned above.

Berkowitz’s frustration-aggression approach is an explanation of reactive aggression as opposed to instrumental aggression, which is the use of harm as a means to an end. Thus, his approach implies that people under any type of stress are likely to commit physical assault and other types of expressive aggression. On the other hand, the theory does not address how stress might be related to economically motivated crimes, such as theft and selling illegal drugs, or other kinds of aggression that are specifically instrumental.

### General Strain and Crime

Aversive stimuli are also central in Agnew’s general strain theory of crime (Agnew 1992). Agnew described his approach as a general strain theory in order to contrast it with traditional strain theory which, emerging out of Merton’s theory of anomie (1938), had a narrow focus on difficulties in meeting economic goals. Agnew claimed that a much broader range of strains could lead to criminal behavior. For example, he argued that the death of a friend, financial difficulties, mistreatment by others, and parental divorce all lead to crime because they are aversive (1992). The mediating mechanism at the heart of his theory is similar to Berkowitz’s: strain produces negative affect, and negative affect (particularly anger) leads to criminal behavior.

In the original presentation of the theory, Agnew (1992) hypothesized that there would be a broad association between most types of stress and most types of crime. He also implied general effects of stress when he suggested that the total amount of stress is more important than the type of stress (1992, pp. 62–63). This broad link between stress and

crime means that negative affect produces an impetus toward crime, whether or not the crime bears any relationship to the stress.

As general strain theory has developed, however, the explanations for the relationship between stress and crime have changed somewhat. Agnew's integration of general strain theory with other theories led him to propose that some types of strain would be more criminogenic than others (Agnew 1999; Agnew et al. 2002). Specifically, he suggested that strain is more likely to result in crime when it is seen as unjust, when it results from low social control, and when it creates pressures or incentives to engage in deviant coping (Agnew 2001). Most relevant to the current study, Agnew has placed more emphasis on crimes that are an instrumental response to a problem created by a particular stress. To the extent that crime is a corrective action, it should produce special links between specific strains and specific crimes, rather than the broad connection of stress to all crimes in earlier general strain theory (Agnew 2006a, b).

We are aware of only two studies that have examined the relationship between specific strains and specific crimes. First, Mazerolle and Piquero (1998) examined the relationship between different types of strain and the intentions of college students to shoplift, fight, and engage in drunk driving. Types of strain included removal of positive stimuli, experience of negative stimuli, perceived disjunction between aspirations and expectations for a college degree, and perceived unfair treatment at school. Only two out of the fifteen relationships examined were statistically significant.

Second, De Coster and Kort-Butler (2006) reasoned that the domains in which stresses occur should match those in which delinquency takes place. They found that stresses at school are more strongly associated with delinquency at school, stresses at home are more strongly associated with delinquency at home, and stresses from peers are most strongly associated with delinquency directed at peers. These findings are consistent with the idea that the links between crimes and stress are specific rather than general and that stress-related crime is instrumental. We seek to expand evidence on this issue by studying a different aspect of generality. Where De Coster and Kort-Butler examined the match between stress and crime in terms of location and target, our work concerns the correspondence between the source of stress and the type of crime.

### Crime as an Instrumental Response to Stress

A rational-choice perspective posits that offenders harm others and break laws because they can achieve some outcome they value at not too high a cost (e.g., Cornish and Clarke 1986; Tedeschi and Felson 1994). Experiencing aversive stimuli should only instigate criminal behavior if it leads the actor to anticipate a valuable payoff. Thus, a rational-choice perspective is in sharp contrast to the frustration aggression perspective and general strain theory, not only because aversive stimuli have no unique significance, but also because negative affect is not a direct instigator of criminal behavior. More importantly for our purposes, in the rational choice perspective, stress will only result in instrumental crime that addresses the problem posed by the stress. This is consistent with more recent general strain theory which views some crime as corrective action. In both, different types of stress indicate different types of problems and therefore should lead only to those crimes that somehow address the problem and not to the unrelated crimes posited by frustration aggression approaches and early general strain theory.

Tedeschi and Felson (1994) presented a rational choice explanation that is helpful for predicting when stress will lead to violence as instrumental behavior. According to their approach, some acts of violence are predatory while others are dispute-related, but all

involve instrumental aggression. Dispute-related incidents stem from conflicts where there is some provocation, real or imagined. People engage in violence during disputes in order to deter others from repeating the offensive behavior, as retribution for wrongful behavior, and to protect their self-image or reputation. Anger is related to aggressive behavior because people get angry when they have a grievance, not because negative affect, in general, instigates aggressive behavior (see Averill 1982; Piquero and Sealock 2004).

From Tedeschi and Felson's perspective, only aversive stimuli that involve personal attack or the assignment of blame should instigate aggressive behavior. There must be some grievance, loss of face, or desire to deter the adversary from future attack. If this is correct, aversive stimuli involving interpersonal conflict should be much more likely to lead to assault than other kinds of aversive stimuli. In contrast, frustration-aggression theory suggests that aversive stimuli should have similar consequences regardless of their source.

Supporting the rational choice perspective, experimental studies have shown that only arbitrary or unjust aversive events resulted in aggression; aversive events that were legitimate did not (see Tedeschi and Felson 1994 for a review). In addition, participants were more likely to respond with aggression to an attack from a person than from a machine (Sermat 1967). Laboratory studies have also made clear that participants would not respond to physical pain (e.g., holding their hands in cold water) unless they were also personally insulted or otherwise attacked (e.g., Baron and Bell 1975). Also supporting the rational choice perspective are studies of the social interaction leading to homicide and assault. They show the central roles of grievances and escalating personal attacks, not the presence of general aversive stimuli (e.g., Luckenbill 1977; Felson 1982). We rarely observe aggressive responses to the most aversive experiences in life, e.g., pain, illness, and the death of loved ones, unless those experiences can be attributed to careless or intentional actions of other persons (see Tedeschi and Felson 1994). People get upset when a loved one dies but they do not usually commit crime as a result. On the other hand, aggression is a common response to even a petty insult.

According to the rational choice point of view, interpersonal stresses should have little bearing on offenses with economic payoffs, such as burglary or theft. Financial stress should cause these offenses, since it leads individuals to place greater value on the monetary payoffs that these crimes produce. Thus, Jacobs and Wright (1999) found that armed robbers typically committed their crimes in order to continue their party life style after they ran out of money.

## Current Study

In this study we perform within-person analyses of inmate data to analyze monthly variation in different types of stress and its relationships to different types of crime. We examine whether offenders are more likely to commit crime in general or only particular types of crimes during months in which they are under particular types of stress. We examine stress from five sources (family, financial problems, work, serious illness or injury, and the death of a significant person) in relation to physical assault and two economic offenses (property crimes and selling illegal drugs).

Since we do not have measures of negative affect or rewards and costs, we cannot examine the mediating role of internal states. Instead, we use discriminant prediction as our method of theory testing, or what experimental psychologists call "control construct

design” (see Felson 2002). In criminology, the method involves examining multiple dependent variables to determine whether a theory predicts “all that it should, and not what it shouldn’t.” In experimental psychology it involves comparing the effect of a treatment on the predicted outcome to its effect on a related outcome that should not be affected.

Our first two hypotheses derive from explanations that portray the impact of stress as affecting broad classes of crime, rather than for a specific criminal act having the potential to address the problem created by the stress. A frustration-aggression approach implies that any source of stress is likely to be associated with an aggressive response. From this perspective we generate the following hypothesis:

**H1** Stress from all sources should be more strongly related to assault than to economic crimes (property crime and selling illegal drugs).

If, however, the negative affect produced by stress leads generally to offending behavior, as suggested in the early version of Agnew’s (1992) general strain theory, then we should expect:

**H2** Stress from all sources should be associated with all three types of crime (assault, property crime, and selling illegal drugs).

In contrast, viewing crime as instrumental behavior, as in a rational-choice approach or more recent versions of general strain theory (Agnew 2006a, b), implies specific links between different types of stress and offenses that address the particular stress. It does not predict relationships between stressors and offenses that are not responsive to that type of stress:

**H3** Family stress should be most strongly related to assault while financial stress should be most strongly related to economic crimes.

**H4** Stress from illness/injury, work, or a death of a significant person should not be related (or only weakly related) to either assault or economic crimes.

Hypothesis 3 is based on the assumption that stress in the family often involves conflict among family members, and that some of the assaults reported involve family members, either as the target of the assault or a party to a grievance. If these assumptions are valid, then family stress should be more strongly related to assaults on family members than to other assaults. In a supplementary analysis we examine this issue.

Hypothesis 3 also suggests that it is primarily family stress that affects assault because the other sources of stress are not strictly interpersonal. Even so, the other sources of stress could involve interpersonal conflicts. For example, work stress may result from disputes with co-workers and injury may be related to victimization. For this reason we state hypotheses 3 and 4 in relative rather than absolute terms.

Hypotheses 3 and 4 are stated in relative rather than absolute terms for two additional reasons. First, specific offenses do not correspond perfectly with specific motivations. For example, not all property crimes are economically motivated: offenders may take the property of victims as a form of punishment for some perceived wrong (see Black 1983). Second, Tedeschi and Felson (1994) emphasize both careless decision-making and the importance of social interaction between adversaries in their approach. They suggest that any type of stress can facilitate violence if people under stress tend to make careless decisions. In addition, stress can have an indirect effect on violence if it interferes with a person’s performance and leads to his or her involvement in interpersonal disputes. As a result of these processes, violence (and perhaps nonviolent crime) may be related to stress



from non-human sources; however, the relationship should be much weaker than the relationship between violence and the stress associated with interpersonal disputes.

## Methods

We used data from Horney's (2001) Second Nebraska Inmate Study. A random two-thirds of male felons newly admitted to the state correctional system were invited to participate in the study, and 90.4% completed the interview. We use 695 cases from a total sample of 717, omitting 22 respondents who were missing data on many of our measures. See Horney (2001) for more information about this sample and the data collection procedures.

Inmate samples are well suited to assessing the impact of stress on criminal behavior (Slocum et al. 2005). The respondents' high rates of offending and the considerable instability of their lives provide the within-person variability necessary for detecting associations over short time spans.

The data come from a computerized life event calendar interview that covered the 36 months preceding the arrest that led to respondents' incarceration. The event history calendar method is uniquely suited to obtaining quantitative data on a time scale of a month or less, which is especially valuable for investigating causal factors, such as stress, that are expected to have relatively immediate effects. Though the event calendar method makes considerable demands on respondents' memories, it also provides valuable aids to recall, thereby enhancing accuracy (see Roberts and Horney 2010, for a review of the method and assessments of its reliability and validity).

## Measurement

We examined three different crimes as outcomes. For a number of different offenses, respondents were asked to identify the months in which they committed the offense. More detailed questions were used to estimate typical rates of offending. For the purposes of this study, we treated each variable as a dichotomy, where a response was coded as "one" if the respondent had committed the offense during the month, and "zero" otherwise.

For assaults, respondents were asked to show the months in which they were involved in physical confrontations in which they attacked another person (an attack that went beyond pushing and shoving). Dealing drugs referred to selling, making, smuggling, or moving drugs. For property crime we coded as "one" any month in which the respondent reported having committed burglary, theft, auto theft, forgery, fraud, personal robbery or business robbery.

We used five of the measures of stressful life experiences studied by Slocum et al. (2005) in our analyses. Respondents were asked about their experience of severe, unusual, or out of the ordinary stress related to each of the following: the death of a significant person, finances, family (relationships with partner, children or other family), serious illness or injury (experienced by respondent or someone close to respondent), and work. The respondents were asked whether they had experienced each type of stress during each of the 36 months. Each measure of stress was coded "one" for months respondents answered in the affirmative and "zero" otherwise.

While our statistical approach controls for stable individual differences, it does not control for other explanatory factors that vary over time. Especially relevant are several aspects of life circumstances that might affect the likelihood that various types of stress would arise. We therefore include in our analyses the six measures of current life

circumstances that Horney et al. (1995) and Slocum et al. (2005) used. Whether respondents live with their parents, wives, or children may be relevant to family stress, for example. Being employed is particularly germane to stress from work. We also included a measure of whether respondents were under justice system supervision each month through probation or parole.

Past research has also found that offenders are involved in more criminal behavior during periods in which they are drinking, using drugs, or frequently engaging in unstructured socializing (Horney et al. 1995; Osgood et al. 1996; Jacobs and Wright 1999; Uggen and Thompson 2003). Because these activities may also be related to stress (Slocum et al. 2005), failing to take them into account might bias our estimates. To address this issue we controlled for alcohol consumption, drug use, and unstructured socializing during each month.<sup>1</sup> To measure alcohol consumption respondents were asked about the number of days they used alcohol during each month and the number of drinks typically consumed on days they were drinking. We combined the two questions to produce a variable reflecting whether respondents had been light, moderate, or heavy drinkers, which preliminary analyses indicated best captured the relationship of offending to the pair of items. Light drinkers, coded zero, were respondents who drank less than once per week (no matter how much they drank on those occasions) or had fewer than four drinks per day when they drank (no matter how often they did so). Heavy drinkers, coded two, not only drank more than once a week, but also consumed seven or more alcoholic drinks per day they drank. The remaining respondents constituted the moderate drinkers, coded one.

We included two measures of drug use. The first is based on marijuana use during each month. The response categories ranged from “never” (0) to “almost daily” (4). The second was based on the use of drugs other than marijuana, including cocaine; crack; heroin; speed/meth or amphetamine; acid or other hallucinogens; and other drugs not specifically asked about. The measure reflected the frequency with which the respondent used whichever drug he used most often that month, calibrated by the same four-point response scale as marijuana.<sup>2</sup>

Osgood et al.’ (1996) concept of unstructured socializing refers to time spent in leisure activities with peers, away from authority figures who have obligations to maintain order, during which there is no agenda for how time will be spent. They argue that situations conducive to crime are especially prevalent during such activities, so the opportunity processes of routine activity theory will lead this type of time use to be associated with higher rates of crime. Our measure of unstructured socializing was based on questions about participation in four types of activities: the number of nights spent out per week during the month (0–7), and the frequency of hanging out with friends, cruising in an automobile, and going to bars (from “never” (0) to “almost every day” (3)). Our measure was the sum of these items, divided by four, with nights out converted to a range of 0–3 so that all items in the scale would be weighted the same.

<sup>1</sup> Another possibility is that these variables mediate between stress and crime, such as if the death of a family member led a respondent to use hard drugs, which in turn motivated financial crimes. In that case, it would be preferable to omit these variables from the analysis. To test for this possibility, we also estimated all models without controlling for these measures. The pattern of results remained the same, though the statistically significant relationships were somewhat stronger.

<sup>2</sup> Preliminary analysis indicated that this coding efficiently capture the relationship of these several drug items to offending.

## Statistical Approach

Our data present two primary statistical issues, which we address in the same fashion as did Horney et al. (1995) and Slocum et al. (2005). First, because event calendar data include many monthly observations nested within each individual, they are subject to the statistical problem of dependence, both due to individual differences in overall rates of offending and due to increased similarity among responses that are closer together in time (i.e., serial correlation). Second, we wish to focus our analysis on within-individual change in order to control for stable individual differences, whether measured or not. Both Horney et al. (1995) and Slocum et al. (2005) describe in detail this approach and the rationale behind it, so we provide only a brief characterization here. Specifically, we used the HLM6 software (Raudenbush et al. 2004) to estimate multi-level regression models, which address dependence through random intercepts and random coefficients for functions of time (Raudenbush and Bryk 2002). We obtain estimates of within-individual relationships by expressing the explanatory variables as deviations from individual means over time and by controlling for those individual means (Raudenbush and Bryk 2002; Allison 2005). Because our outcome measures are dichotomous indices of whether or not a crime occurred each month, our analyses are logistic hierarchical generalized linear models, and our results take the form of logistic coefficients. We report unit specific coefficients with robust standard errors.

Our sample includes 695 respondents and the 21,224 person/months of data representing months when the men were not incarcerated. We follow Horney et al. (1995) in modeling the overall time trend in offending through a cubic function of time, plus a dummy variable reflecting the final month on the calendar when all the offenses that led to incarceration occurred.<sup>3</sup>

## Results

In Table 1 we present descriptive statistics. The results show that assaults were committed in 8% of the months (combining all months for all respondents), property crimes in 14% of the months, and drug dealing in 30% of the months. The most common type of stress was financial stress, experienced in 18% of the months, followed by family stress, experienced in 17%. The least common stress was due to death, which respondents reported in 3% of months. Respondents contribute to our within-person estimates of effects of a type of stress on crime only if they report both months with that stress and months without. Proportions of respondents reporting this type of change on the stressors ranged from 25% for death to 40% for family (as reported in the last column of Table 1).

The within-person effects of different types of stress appear in Table 2. The results provide strong support for hypothesis 3 (family stress should be most strongly related to assault while financial stress should be most strongly related to economic crimes) and moderate support for hypothesis 4 (stress from illness, work, or a death should be, at most,

<sup>3</sup> Note that our analyses address only the relatively immediate effects of stress and not any more enduring effects that could conceivably arise from chronic stress. We examined that possibility as well, but the results were not informative. If frequently enduring stress engenders offending over an extended period, then individuals' mean levels of stress over time would be associated with their mean offending, above and beyond the monthly relationship. This relationship is captured by the between-individual terms in our analyses. None of these effects reached statistical significance, but their standard errors were so large that these significance tests mean very little.

**Table 1** Descriptive statistics

	Proportion of months		Proportion of respondents who change
<b>Measures of offending</b>			
Assault	0.08		0.62
Dealing drugs	0.30		0.35
Property crime	0.14		0.48
<b>Stressors</b>			
Financial	0.18		0.35
Work	0.12		0.27
Death	0.03		0.26
Illness/injury	0.05		0.24
Family	0.17		0.40
<b>Life circumstances</b>			
Live with parents	0.25		0.31
Live with wife	0.16		0.13
Live with children	0.20		0.13
Live with significant other	0.26		0.31
On probation or parole	0.17		0.37
Employed	0.69		0.45
<b>Other controls</b>			
	Mean	Standard deviation	Proportion of respondents who change
Marijuana use	1.84	1.82	0.28
Other drug use	2.15	1.82	0.38
Alcohol use	0.82	0.90	0.31
Unstructured socializing	1.57	0.72	0.84
	No. of months = 21,224		No. of respondents = 695

weakly related to assault or economic crimes). The results do not support hypothesis 1 (stress from all sources should be more strongly related to assault than to economic crimes) or hypothesis 2 (stress from all sources should be associated with all three types of crime).

The results show that specific stressors are related to specific crimes in a pattern predicted by an instrumental explanation. Family stress is strongly associated with assault (logistic  $b = .695$ ,  $p < .001$ ) while its relationships with property crime and drug dealing are weak and not statistically significant. On the other hand, financial stress is strongly associated with property crime ( $b = .801$ ,  $p < .001$ ) and drug dealing ( $1.087$ ,  $p < .05$ ), while its relationship with assault is weak and not statistically significant. Indeed, the other four types of stress as a group do not significantly add to the explanation provided by financial stress for either dealing drugs ( $\chi^2 = 2.24$ , 4 *df*,  $p > .5$ ) or property crime ( $\chi^2 = 1.71$ , 4 *df*,  $p > .5$ ). The only other statistically significant association between stress and crime is a moderate relationship of stress due to illness/injury with assault ( $b = .435$ ,  $p < .05$ ), and this form of stress is weakly and not significantly related to drug dealing and

**Table 2** Hierarchical logistic regression estimates, with standard errors in parentheses

	Assault	Dealing drugs	Property crimes
Sources of stress			
Financial	0.131 (0.145)	1.241** (0.401)	0.769** (0.253)
Work	0.213 (0.191)	0.140 (0.287)	-0.075 (0.338)
Death	0.263 (0.254)	0.422 (0.335)	0.164 (0.256)
Illness/injury	0.442* (0.186)	-0.297 (0.514)	-0.007 (0.295)
Family	0.691*** (0.164)	-0.134 (0.298)	0.300 (0.248)
Life circumstances			
Live with parent	-0.193 (0.187)	-0.097 (0.357)	-0.165 (0.244)
Live with child	-0.242 (0.296)	-0.521 (0.648)	-0.684 (0.489)
Live with significant other	-0.028 (0.186)	0.848* (0.378)	0.420 (0.341)
Live with wife	0.474 (0.318)	-0.485 (0.662)	0.514 (0.432)
Employed	-0.030 (0.131)	-0.859** (0.274)	-0.364 (0.230)
Probation or parole	0.194 (0.139)	0.375 (0.327)	0.039 (0.201)
Other controls			
Marijuana use	0.123 (0.085)	0.972*** (0.167)	0.312* (0.123)
Other drug use	0.217*** (0.060)	1.231*** (0.135)	0.509*** (0.110)
Alcohol use	0.226 (0.199)	0.308 (0.432)	0.761* (0.324)
Unstructured socializing	0.535*** (0.157)	1.688*** (0.338)	0.912*** (0.233)
Variance components			
Intercept			
Linear time	1.773***	17.373***	7.540***
Time squared	0.003***	0.038***	0.012***
No. of person-months	21,214	21,214	21,214
No. of persons	695	695	695

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

property crimes. None of the crimes is significantly related to stress resulting from death or work. These results are inconsistent with frustration-aggression approaches and with the notion that stress leads to a general tendency to offend.

Note that the significant effects supporting Hypotheses 3 are strong. The odds that a respondent committed an assault are 100% higher (odds ratio =  $\exp(.695) = 2.00$ ) during months in which he experienced family stress than during months in which he did not. The odds that a respondent committed a property offense in a given month are 116% higher if he experienced financial stress during that month. Finally, the odds that a respondent was dealing drugs are almost 250% higher in months in which he experienced financial stress.

We also observe some effects of the control variables. Note, however, that these effects may be diminished because the equations include the stress variables which are likely to be mediators of their effects. We find that unemployment is associated with dealing drugs and property crimes but it is unrelated to assault. Living with significant others is associated with drug dealing. Marijuana and other drug use have substantial relationships with dealing drugs and property crime but are only slightly related to assault. Alcohol use is related to property crime but, surprisingly, is not significantly related to assault. Finally, rates of all three types of offenses are higher during months that respondents engaged in more unstructured socializing.

### Lagged Effects

Our analysis above is based on measures of stress and offending during the same month. We preferred this to modeling a lagged effect of stress because all three theories imply short term causal processes in which the offenses occur while the individual feels stressed, not later. It is possible, however, that the positive relationships we observe are due to the effects of offending on stress rather than the reverse. While it is unlikely that property crime and selling drugs produce financial stress, it may be that assaultive behavior produces family stress. If offenders are violent toward their family members, or going through a period where they act aggressively, it may produce stress in the family. To examine the possibility of a reciprocal relationship, we estimated an additional set of models in which we lagged the explanatory variable 1 month before the outcome variable. These analyses showed that the relationship between family stress and assault in the following month ( $b = 0.513$ ; S.E. = 0.174;  $p < .01$ ) is substantial and significant. On the other hand, the relationship between assault and family stress in the following month is not significant ( $b = 0.311$ ; S.E. = 0.178;  $p < .10$ ). The evidence supports our assumption that family stress leads to assault rather than that assault results in family stress.

### Assaults on Family Members

Our data also enable us to conduct a more focused test of the logic underlying Hypothesis 3, that family stress will be associated with assaults. Violence is typically directed at the person with whom one has a grievance, not displaced onto third parties (Luckenbill 1977; Tedeschi and Felson 1994). Therefore, viewing crime as an instrumental response to stress, as in a rational choice approach, implies that the association of family stress with assault reflects family conflicts. We should find that family stress is more strongly related to assaults on family members than to assaults on non-family members. Although family stress might lead to some assaults against non-family members, as in attacking someone who did harm to a family member, it should much more often lead to assaults on family members.

We examined effects on family and non-family assaults in a supplementary analysis using respondents' identifications of their relationship to the victim in each violent event reported on the calendar. These data come from a separate portion of the interview in

which respondents gave narrative accounts and answered specific questions about up to ten incidents of assault reported in the event calendar, beginning with the most recent assault (Horney 2001). Those reports include a total of 191 assaults against family members and 784 assaults against other people, providing enough incidents of each type for our analysis. The results support the view of crime as an instrumental response in that family stress coincided with higher rates of both types of assault, but was much more strongly associated with assaults on family members. In months of family stress, the odds were 337% higher that a respondent would assault a family member ( $b = 1.475$ ,  $S. E. = 0.307$ ,  $p < .001$ ). Family stress also increased the odds of assaults on other people by 60% ( $b = 0.475$ ,  $S.E. = 0.172$ ,  $p < .01$ ).<sup>4</sup>

## Discussion

The present study seeks to advance our understanding of the relationship between stress and crime by examining which types of stress are associated with which types of crime. We used within-person analyses to analyze monthly variation in crime and its relationship to different types of stress. The method allows us to rule out stable individual differences that might produce a spurious relationship between stress and crime. Thus, our finding that within-person variation in stress is substantially related to criminal behavior contradicts the argument that the association between crime and stress is only due to a stable personality trait such as self control (see also, Slocum et al. 2005). This statistical approach also allows us to model the short-term effects of stress that are specified by the major theoretical perspectives.

In contrast to frustration-aggression theories, we did not find evidence that all types of stress are associated with assault. Only the relationships between assault and family stress and between assault and stress due to illness or injury were statistically significant, and the former was considerably stronger than the latter. One could argue that most of the stressors we examined have weaker effects on assault because they are not as aversive as family stress. Perhaps with more statistical power or better measures we would have found statistically significant effects for all types of stress. After all, the non-significant coefficients relating other stresses to assault were all in the predicted direction. We believe, however, that our failure to find broader and stronger relationships between stress and assault clearly contradicts the essence of frustration-aggression approaches, which is that aversive stimuli, broadly defined, consistently instigate reactive aggression. The only plausible defense we can see for the frustration-aggression perspective would be if aversive stimuli only have instantaneous effects that cannot be detected in monthly data. The negative affect might have dissipated too quickly. Psychologists' classic experimental studies of the frustration-aggression hypothesis focused on such instantaneous effects. Even so, we would expect that an experience that is aversive enough to provoke a serious assault would be salient enough for respondents to report that a month had been stressful.

We also failed to find a strong and pervasive effect of stress on all types of crime, as might have been predicted from early versions of general strain theory (Agnew 1992). Most of the relationships between stress and assault and all eight relationships between non-financial stresses and financially motivated crime were small and not statistically significant. Four of these eight coefficients were negative rather than in the predicted positive direction, and six were less than their standard errors.

<sup>4</sup> These coefficients come from models including all the variables shown in Table 2.

Our results provide the strongest support for viewing crime as an instrumental response to stress, consistent with a rational choice approach and statements about crime as corrective action in general strain theory. Incidents of assault are associated with stress from interpersonal sources, consistent with Tedeschi and Felson's (1994) rational choice explanation of violence. Offenders are more likely to engage in assault during months when they have family problems, and they are particularly likely to assault members of their families during these months. The weaker but significant association of assault with stress from illness and injury would also be consistent with the theory if those assaults were responses to injuries from attacks on the offender or those close to him. In contrast, offenders are more likely to steal and sell drugs only when they are having financial problems. Thus, they appear to be responding to specific social situations, not reacting to generalized stress. They assault someone during times of conflict, and they steal and sell drugs when they need money. These findings are more in line with a rational choice perspective or recent formulations of general strain theory (Agnew 2006a, b; De Coster and Kort-Butler 2006) that focus more on instrumental functions of criminal behavior.

The effects of our control variables are also consistent with an instrumental view of crime. Unemployment and alcohol and drug use were associated with the financially motivated crimes but they were unrelated to assault. Presumably, offenders are more likely to commit financial crimes when they are unemployed or need money for their party lifestyle (Jacobs and Wright 1999).

Finally, we find support for the idea that the incentives for crime vary across time as well as across individuals. The notion of time-varying motivation challenges Gottfredson and Hirschi's (1990) contention that incentives for crime are relatively constant within persons over time. Instead, from a rational choice perspective, explanations of crime should encompass both individual differences in decision making, such as those articulated in self control theory, and the effects of life circumstances on the perceived value of rewards and costs of crime.

### Stress, Emotions and the Explanation of Crime

What are the larger implications of our results for the role of stress and emotions in the explanation of crime? We do not claim that our findings suggest that stress and emotions are irrelevant. The main conclusion we draw is that the consequences of stress are largely limited to crimes that target the problem creating the stress. Further research would be needed to determine if the connection between a difficulty like running out of money and turning to a crime like theft is contingent on becoming distraught or angry.

To be compatible with our findings, theories that assign a major causal role to negative emotions must entail a focused conception of the emotional links between stressors and illegal acts. If emotions play a causal role, it is not in the form of a general impulse toward violating laws or even toward harming others. Instead, the emotion would have to create a more instrumental impulse directed at addressing the source of the stress. Agnew (2006a, b) attempts to do this in his later work at when he argues that anger leads to violent crime, envy leads to financial crime, and depression leads to drug abuse.

A rational choice approach requires no such emotional reaction, of course. Offenders have financial problems and attempt to solve them through theft or drug dealing. When someone wrongs them, they may commit assault in an attempt to gain retribution, save face, or deter further misbehavior. They are often angry, but their assault is goal-oriented, not a response to an inner compulsion.



Even so, the rational choice approach is not incompatible with emotion playing a meaningful role in the connection between stress and crime. Many rational-choice theorists use the name reluctantly because they know that rationality is “bounded,” that is, that behavior reflects subjective judgments about payoffs and that individuals often make careless decisions that produce disastrous outcomes for themselves as well as their victims. In the case of aggression, actors may be so emotional at the time, and their attention so focused on what has angered them, that they do not give the costs of their behavior much consideration. They may be preoccupied, but their behavior is still goal-oriented.

Another way of integrating emotion with rational choice would be to view a strong emotional response to an insult or financial loss as indicating that a person would put an especially high value on retribution or quick financial gain. If so, the stronger the emotional reaction, the more likely crime will occur. Here emotion would not be a separate causal force but instead a reflection of the impact of the stressful situation on perceived benefits of crime. Finally, in a rational choice approach, negative emotions may contribute to crime by avenues other than heightened motivation. For instance, a bad mood may interfere with a person’s capacity for maintaining normal interaction rituals (Goffman 1959). Impoliteness or other poor performances at these times could lead to verbal conflicts which then escalate into violent confrontations (Felson 1992). Emotion, then, can play a role in criminal behavior, according to a rational-choice perspective, although the emphasis is on cognition and decision making, and negative affect is not a necessary causal element (see Frank 1988).

In sum, we believe that our findings clarify the nature of the association between stress and crime in a way that provides useful guidance for future theoretical development. We see special promise for theories that can combine attention to life difficulties, stress, and emotions with a focus on costs and benefits and with a careful analysis of the specific situations that lead to crime.

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