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Tests of Theories of Crime in Female Prisoners: Social Bond and Control, Risk Taking, and Dynamic Systems Theories

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Tests of Theories of Crime in Female Prisoners: Social Bond and Control, Risk Taking, and Dynamic Systems Theories

Marc A. Lindberg¹, April Fugett¹, Ashtin Adkins¹, and Kelsey Cook¹

Abstract
Several general theories of crime were tested with path models on 293 female prisoners in a U.S. State prison. The theories tested included Social Bond and Control, Thrill/Risk Seeking, and a new attachment-based Developmental Dynamic Systems model. A large battery of different instruments ranging from measures of risk taking, to a crime addiction scale, to Childhood Adverse Events, to attachments and clinical issues were used. The older general theories of crime did not hold up well under the rigor of path modeling. The new dynamic systems model was supported that incorporated adverse childhood events leading to (a) peer crime, (b) crime addiction, and (c) a measure derived from the Attachment and Clinical Issues Questionnaire (ACIQ) that takes individual differences in attachments and clinical issues into account. The results were discussed in terms of new approaches to Research Defined Criteria of Diagnosis (RDoC) and new approaches to intervention.

Keywords
female prisoners, attachment and crime, risk seeking theories of crime, social bond theories, ACIQ, RDoC diagnoses, individual versus group analyses, dynamic systems theories of crime

Although there is an extensive literature proposing and testing several general theories of crime, these have been primarily developed and tested with male prisoners and delinquents. These have not, however, been as rigorously studied and tested on women

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prisoners and this neglect seems to have been most severe for the classic Social Bond and Control theory of crime and Thrill/Risk Seeking theories. Thus, it was the purpose of the present investigation to explore the applicability of these criminological theories to females and to test a new one coming from developmental dynamic systems approaches. We will now turn to brief discussions of the theories and why these tests are important in dealing with the complexities involved in reducing rates of recidivism.

Social Bond and Control Theories

A criminological theory that focuses on the importance of relationships in relation to criminal behavior is the social bond theory. Hirschi’s (1969) original theory suggested that delinquent behaviors begin when social bonds are poor or absent, which in turn lead to weaker levels of control. Gottfredson and Hirschi (1990) went on to amend this theory, suggesting that there are three major components to criminality: self-control, parental management, and opportunities for deviance. The basis for self-control was theorized to develop within the family through proper supervision and monitoring. They suggested that in the absence of proper parental management, low self-control can develop, leaving one with an increased likelihood of engaging in criminal acts (Gottfredson & Hirschi, 1990). Therefore, according to Gottfredson and Hirschi’s (1990) theory, it is predicted that those who experienced poor parental management and chaotic family environments as a child will have low self-control. This, along with the presence of criminal opportunities to commit crime, is theorized to produce individuals who are more likely to engage in criminal activities. This model therefore predicts that adverse childhood events like parental neglect and abuse, and growing up in families with few rules and regulations should lead to one’s development of criminal thoughts and behaviors. Because the Adverse Childhood Events Questionnaire (ACE; Felitti et al., 1998) has scales specific to parental abuse and neglect, it was selected as a measure to test this theory in this investigation. Furthermore, because the Attachment and Clinical Issues Questionnaire (ACIQ; Lindberg & Thomas, 2011) contains the family rigidity versus chaos scale measuring the extent to which families have and follow rules, it was also selected for use in testing this model.

It should be noted that the low self-control theory is not always clear on whether there is a separation between a need and motivation for control or if it is just an expression of whether or not it is just a behavioral tendency. Because it has been reasoned that the behavioral measures are circular tautologies (Akers, 1991; Geis, 2008; Grieger, Hosser, Alexander, & Schmidt, 2012), where lack of control is measured in terms of criminal and delinquent behaviors, and because these two different meanings of control have been used by Gottfredson and Hirschi (1990), it was reasoned that the more appropriate measure should tap desire for control. This measure of motivation for control and rules has been precisely measured by the Control scale of the ACIQ that looks at one’s desire for control which according to Gottfredson and Hirschi (1990) is interpreted as coming from family rules, a lack of parental abuse and neglect, as well as a lack of exposure to peers who do not control themselves as measured by their delinquent behavior.
Thrill/Risk Seeking Theories

Another set of theories regarding the key causes of crime comes from the sensation seeking and risk taking models of desistance. This approach suggests that individuals prone to desistance are born with a tendency to like the risks and thrills they can get from engaging in dangerous behaviors (Zuckerman, 1994). In support of this, it has been found that risk taking behaviors, such as driving in a reckless manner, engaging in violent and power sports, taking drugs, engaging in promiscuous sex, and gambling are all correlated with one another (Endresen & Olweus, 2005; Zuckerman, 2007). Zuckerman (2007) has reasoned that because crime and delinquency are also correlated with the above mentioned risky behaviors, there must be a common underlying factor. This common factor was labeled “sensation seeking.” Sensation seeking is theorized to be a trait defined as the seeking of varied, novel, complex, and intense situations and experiences. Zuckerman (2007) has theorized that sensation seeking is associated with a general deviance factor that includes drug use, sexual risks, and disobedience of the law. He also suggested that the use of alcohol and drugs increases criminal behavior because they have a disinhibiting effect on this risky behavior, and because drugs and gambling require money to sustain them. Thus, they act in feedback loops to increase criminal tendencies that were primed by the sensation seeking tendencies.

In expanding Zuckerman’s (2007) theory, Desrichard and Denarie (2005) asked what could be responsible for this incentive to seek out more stimulation. They found that risk taking is driven by negative affectivity such as high levels of anxiety and shame leading one to be more likely to seek out intense stimulation to achieve positive affect. If this model is correct, then it is predicted here that Shame and Anxiety would lead to crime because they are theorized to be indicators of negative feelings of self and things in general. Thus, the Anxiety and Shame scales on the ACIQ should predict Sensation Seeking. Sensation Seeking, in turn, would then predict reports of criminal behavior as well as scores on screening measures for alcohol and drug dependence. Furthermore, alcohol and drug scores would also be theorized to predict an increase in reports of criminal behaviors through disinhibition, and also serve as a feedback loop to crime increasing its occurrence because of the increased need for money to purchase the alcohol and drugs.

The Attachment and Developmental Systems Theory of Crime

There are clear theoretical and empirical findings that point to an attachment hypothesis of criminal behavior (Belsky, 1999a, 1999b; Belsky & Pluess, 2009; Fearon, Bakermans-Kranenburg, Ilzendoorn, Lapsley, & Roisman, 2010; Fearon & Belsky, 2011; Hoeve et al., 2012; Lindberg, Fugett, & Lounder, 2014; Wampler & Downs, 2010). However, the Girl’s Study Group by Zahn and colleagues (2010) concluded that “Findings on attachment, although commonly more associated with girls than boys, are inconsistent across studies, in part because the concept is difficult to
This problem of measurement was addressed by the ACIQ (Fugett, Thomas, & Lindberg, 2014; Lindberg, Fugett, & Thomas, 2012; Lindberg & Thomas, 2011). The ACIQ battery of 29 scales measures attachments to a variety of different significant others, assumes dynamic systems theories of development, and taps clinical issues that can be related to these attachment patterns.

Why would insecure attachments be one of the most important factors in the development of criminal behavior? First, it has been demonstrated that attachment processes play an important role in the development of parental compliance and authority, and conscience development (Thompson, 2009; van Ijzendoorn, 1997). Second, the hallmark of insecure attachment is that insecure patterns do not lead one to go to secure others for comfort when dealing with negative affect (Cassidy & Shaver, 2008) which has been theorized to be fundamental to the development of criminal behavior (Hirschi, 1969). Furthermore, if one has insecure attachments and a variety of clinical issues such as jealousy, abusiveness, anger, and so on, then they will have difficulties fitting into and being accepted by prosocial peer groups. Furthermore, as Coid (1992) and Deklyen and Greenberg (2008) have pointed out, insecure attachments negatively influence the child’s “theory of mind,” which renders infants and adults poor at inferring their own or others’ emotions and mental states (Fonagy et al., 1997). This failure to understand not only their own but also others’ emotions and mental states has been shown to be related to the inability to empathize with others (Adshead, 2002; Hoffman, 2000). Attachment relationships to partners are also seen as essential ingredients in how one deals with negative affect and unpredictability (Lindberg et al., 2011; Lindberg et al., 2012; Simpson, Collins, & Salvatori, 2011). These insecure relationships developing in adolescence are theorized to add to the problems associated with emotional regulation and criminal behavior (Sampson & Laub, 1993, 2005). Thus, in line with Sampson and Laub (1993, 2005), it is held that one must focus on a variety of social networks in creating developmental pathways (equifinality) to different (multifinality) trajectories toward versus away from criminal and psychopathologic behaviors across the life span (Rowe, Osgood, & Nicewander, 1990; Schreck, Stewart, & Osgood, 2008; Thronberry & Krohn, 2005). For those not familiar with developmental systems theories, “equifinality” is the principle that in open biological systems, similar results may be achieved with different initial conditions and “multifinality” states that they can result in many different manifestations (Cicchetti & Aber, 1998; Granic & Hollenstein, 2003; Thelen & Smith, 1998). Thus, criminals can reach these end states through many different means (different kinds of insecure attachment patterns and clinical issues), and these can be manifested in many ways such as assault, robbery, and so on. In line with the above, the place where all low self-control theories depart from this one is in measurement and then the theoretical and pragmatic implications of stipulating that it is just not a “strength of bond” variable, but rather, “types of bonds” that are most influential and that several different kinds of insecure bonds can eventuate in criminal behavior. This points to the importance of individual differences and it is also predicted that data from the individual profiles will demonstrate this and represents the most significant point of departure of the present theory.
Although the above attachment theory predicts who will be most vulnerable to crime and psychopathology, one also needs to account for why some turn to criminal behavior and why others do not. It is held here that criminal behavior is a way of achieving feelings of power, excitement, and control, and that when faced with negative affect, can serve to hijack the system of insecurely attached individuals who are genetically prone (Olsson et al., 2005) to this stimulation and who do not get these feelings when turning to others (Belsky, 1999a, 1999b; Belsky & Pluess, 2009; Fearon et al., 2010; Fearon & Belsky, 2011). This part of the present dynamic systems theory is closely tied with the physiological literature on addictive substances and behaviors. According to the dopamine hypothesis (Lindberg, Dementieva, & Cavender, 2011; Volkow, Fowler, & Wang, 2003; Volkow, Ruben, Baler, & Goldstein, 2011), those with deficiencies of dopamine (the abused and insecurely attached) are more likely to turn to addictive substances and behaviors that take over the central nervous system and flood receptor cites normally stimulated by food and normal social stimulation (Zuckerman, 1994; 2007). Furthermore, these types of sensation seeking behaviors are theorized to overshadow turning to others to modulate feelings of security (Lindberg et al., 2011; Volkow et al., 2003; Volkow et al., 2011). If these individuals would turn to others, they would also have a variety of attachment-related clinical issues, such as anxiety, jealousy, anger, rumination, abusiveness, shame, control, denial of feelings, perfectionism, and/or mistrust that would increase rather than decrease the stress and coping with negative affect (Lindberg et al., 2012). The stronger the clinical issues and insecure attachments, the more likely one would turn to crime. Furthermore, if they did turn to others, their insecure attachment behaviors and internal working models would not be effective in affect regulation through these means creating an overshadowing phenomenon where the thrills, excitement, and power felt from criminal activity would produce stronger positive affect versus the negative affect of damaging relationships as suggested by Hirschi (1969). Choosing crime over alcohol, drugs, and/or other addictions would be partially determined by the level of peer crime and the individual’s attraction and addiction to criminal sensation seeking, as measured by a crime addiction scale.

Although attachment and clinical issues are considered to be fundamental to the development of criminal behavior (Lindberg et al., 2013; van Ijzendoorn, 1997) dynamic systems and life course history approaches (Belsky & Pluess, 2009; Bjorklund, Ellis, & Rosenberg, 2007) have suggested that this will only be one of the significant paths one must travel on the way to a criminal lifestyle. Ellis and Bjorklund (2012) Moffit (2005, 2006), and Lindberg et al. (2014) have emphasized the role of stressful environments occurring early in development as well as the adaptive functions of crime, such as the inherent power, thrills, and excitement from committing the crime.

To summarize, these attachment, physiological, and life course theories when taken together suggest that early stressful environments are the first part of the trajectory toward crime. The troubling effects of these early environments are then predicted to be exacerbated by the following: (a) higher levels of insecure attachments and clinical issues; (b) epigenetic increases in the expression of a genotype that predisposes one to
find criminal behavior fun, exciting, and power inducing as measured by a crime addiction scale; and (c) exposure to peer criminal behavior when growing up. These three in turn would be significant predictors of reported criminal behavior.

The purpose of the present investigation was to test the above three models of crime in more rigorous path analyses. The models by Gottfredson and Hirschi (1990) and Zuckerman (1994, 2007) are hypothesized to not hold up well under the rigors of path modeling. Although these social control and risk theories capture important ingredients in the development of criminal behavior, neither captures the important interactions, individual differences, and other salient features. Thus, it is hypothesized that the current attachment and dynamic systems theory offered here will provide a significant improvement in predicting criminal behavior and be the best model in terms of fit and amount of variance accounted for. However, it is also hypothesized that most of the scales of the ACIQ will correlate significantly with total crimes reported, but that these correlations will be low because of the individual differences in developmental trajectories toward crime (equifinality). Finally, when examining the individual profiles of criminals all scoring high on the same crime such as assault, the participants will not all fit these patterns. Rather, it is hypothesized that they will show large individual differences in attachment patterns and clinical issues, and it will be seen that the present approach offers a way to move from group to individual analyses in interventions.

Method

Participants

Of the 348 females who were recruited on a volunteer basis from the Lakin Women’s Correctional Center in Point Pleasant, West Virginia, 20 individuals became confused with the numbering of the questions, 24 did not finish for unknown reasons, and 11 did not consent to participate. Thus, 293 questionnaires were utilized for the subsequent analyses. All inmates who were not in detention for recent infractions were brought to the room for possible testing. At the request of the institution, if they did not want to participate, they were told to just sit quietly and relax. Two proctors roamed the room to personally and quietly answer questions. Participants were told not to put their names on anything so that anonymity could be safeguarded and so that no one could know who said what. The major risk in this investigation was a breach of anonymity. To protect anonymity and comply with institution and institutional review board (IRB) requirements, no individual criminal records were reviewed. The research was approved by the Office of Research Integrity.

The following demographic information was gathered from the participating female inmates. In all, 272 (93.79%) participants identified as female, with 14 (4.83%) identifying as male and 4 (1.37%) identifying as other. Notably, some of the females were apparently undergoing hormone therapy and thought of themselves as male. All of the data were included. Age was specified in terms of a Likert-type scale range where 178 (60.96%) identified as being between the ages of 22 and 35; 86 (29.45%) identified as
being between the ages of 36 and 49; 26 (8.90%) identified as being between the ages of 50 and 65; and none of the participants identified as being 66 or above. In addition, 101 (36.59%) participants identified their father’s highest level of education as being high school, 95 (34.42%) noted their father obtained a 3-11th grade education, 45 (16.30%) endorsed some college, 23 (8.33%) endorsed their father being a college graduate, and 12 (4.35%) identified their father as attending graduate school. Ninety-six (33.33), 90 (31.25%), 61 (21.18%), 34 (11.81), and 7 (2.43) identified their mothers level of education as being a high school graduate, 3rd to 11th grade, some college, college graduate, and graduate school, respectively.

The majority of inmates were Caucasian (266, 90.78%), with 14 (4.78) identifying as African American, 5 (1.71%) identifying as Native American, 5 (1.71%) identifying as other, and 3 (1.02%) identifying as Hispanic. Seven (2.4%) attended graduate school, 19 (6.51%) were college graduates, 103 had some college level education (35.27%), 90 (30.82%) were high school graduates, and 73 (25.00%) did not complete high school.

**Dependent variable measure.** The key dependent variables used in this investigation were participant reports of numbers of arrests for different kinds of crimes committed (see Lindberg et al., 2013, for validity checks of this measure against more objective measures). Although a major problem with this was that subjective rather than the more objective measures were used, it also had several advantages. The perceived advantages were that such anonymous reports could increase honesty and reliability of reporting and reduce the fear that one’s scores could be linked to other measures provided. Furthermore, to comply with IRB protocol, case records were not used. See Table 1 for each type of reported crime.

**Instruments**

The following measures were administered, totaling 319 questions.

**ACIQ.** The ACIQ (Lindberg & Thomas, 2011; Lindberg et al., 2012) is a test battery containing 29 scales measuring attachment and related clinical issues. It includes scales measuring avoidant, anxious resistant, codependent/preoccupied, and secure attachments to mother, father, and partner. The instrument’s use of continuous scales allows for the avoidance of problems associated with typologies (Osgood, 2005) and conceptualizes attachment as a multidimensional phenomenon (Lindberg & Thomas, 2011). Furthermore, it has scales tapping relations with peers, religious organizations, two family scales, and two sex scales. It also contains the clinical scales of shame, mistrust, jealousy, withdrawal, control, denial of feelings, anxiety, anger, perfectionism, abusiveness, and rumination. It also has excellent fake good and fake bad scales, and it is fairly immune from social desirability as measured by the Marlow Crowne scale (Fugett et al., 2014). Finally, it contains method malingering scales, wherein one can determine whether an individual is taking the test via a random response set by just filling in answers without reading or understanding the questions (Fugett et al., 2014).
In initial studies, the scales of the ACIQ have been shown to have good coefficient alphas of .79 (Lindberg & Thomas, 2011), and the average coefficient alpha for this sample was .81. Factor analytic studies on the scales have shown that they load on attachment figures and clinical issues rather than attachment styles as have been assumed by traditional attachment researchers (Lindberg & Thomas, 2011). It has also been found to predict to whom one turns in times of stress and also show substantial correlations with mother and father warmth (Lindberg et al., 2012), showing concurrent and discriminant validity as compared with the Experiences in Close Relationships Questionnaire. Furthermore, the attachment scales have been shown to be good predictors of the effects of divorce, with the attachment scales carrying the weight over divorce in predicting problems in adolescence in regression analyses (Lindberg, McMillion, & Thomas, 1999). It has also successfully predicted scores on the Beck Depression Inventory (Taylor & Lindberg, 2006), alcoholics versus controls and adolescents predicted to be alcoholics (Lindberg, Fugett & Carter, in press), as well as eating disorders versus controls (Lindberg, Thomas, & Smith, 2004). It has also successfully predicted numbers of crimes committed among youthful male offenders at a maximum-security prison (Lindberg et al., 2014). Finally, it offers individual profiles that highlight important individual differences necessary to treatment.

The “deviation statistic” incorporating individual differences. One thing that must be considered is how different insecure attachments and clinical issues can be entered into a path if there are so many individual differences leading to crime. A significant problem associated with dynamic systems theories and the construct of equifinality is that if there are many different trajectories to crime, and so many types of insecurity that can do this, then how can one provide a summary statistic that captures degrees of deviation from the norm? For example, one can conceptualize that either high scores on preoccupied mother (depicting enmeshment) or very low scores on this scale (the participant did not care about the feelings of their mother at all) could both be predictive of crime. Absolute difference scores were therefore calculated to attempt to measure degrees of deviation from the norms of Lindberg and Thomas (2011). It was predicted that the stronger the deviations, the more likely that the participant would engage in crime. This “spread from the mean” score would then make it possible to use

<table>
<thead>
<tr>
<th>Frequencies</th>
<th>0 arrests</th>
<th>1 arrest</th>
<th>2-4 arrests</th>
<th>5-8 arrests</th>
<th>9+ arrests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex crimes</td>
<td>275</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>1b</td>
</tr>
<tr>
<td>Manslaughter</td>
<td>242</td>
<td>47</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Drug crimes</td>
<td>153</td>
<td>71</td>
<td>55</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Fraud</td>
<td>170</td>
<td>71</td>
<td>41</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Burglary</td>
<td>214</td>
<td>63</td>
<td>14</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Assault</td>
<td>186</td>
<td>61</td>
<td>34</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 1. Frequencies of the Different Crimes Reported.
this as a general measure of degree of dysfunctional attachments and clinical issues. This statistic was entered into the path.

**CAGE and D-CAGE Questionnaires.** The CAGE is named for its four questions that pertain to Cutting back on drinking, feeling Annoyed that others ask you to cut back on drinking, feeling Guilty about drinking, and needing a drink first thing in the morning as an Eye opener. The CAGE is a brief screening measure used to detect alcoholism, and it has been found to reliably detect alcoholism among both general and clinical populations (Aertgeerts, Buntinx, Fevery, & Ansoms, 2000; Ewing, 1984; Fiellin, Reid, & O’Connor, 2000; Mayfield, McLeod, & Hall, 1974; Reynaud, Schwan, Loiseaux-Meunier, Albuisson, & Deteix, 2001). The CAGE has demonstrated high test–retest reliability (.80-.95), and adequate correlations (.48-.70) with other screening instruments (Dhalla & Kopec, 2007). The questionnaire has been found to be a valid tool for detecting alcohol abuse and dependence in medical and surgical inpatients, ambulatory medical patients, and psychiatric inpatients (average sensitivity 0.71, specificity 0.90; Dhalla & Kopec, 2007). Furthermore, research has revealed that there are no tests that are as short as the CAGE, while still being as accurate in detecting substance use, and that longer tests, such as the Michigan Alcohol Screening Test (MAST) are no more accurate in predicting substance use (Brown, Leonard, Saunders, & Papasouliotis, 2001). Accuracy rates for the CAGE are variable and range from 60% to 95% and specificity rates for the CAGE range from 40% to 90% (Brown et al., 2001). In this sample, the coefficient alpha was .84.

To perform a similar measure for drug use the D-CAGE was used where alcohol was substituted for drugs. The D-CAGE adaptation for detecting drug use has been demonstrated to have reliability, accuracy, and specificity rates that are similar to the original version of the CAGE (Brown et al., 2001). The following statements were rated according to a Likert-type scale: I feel like I should cut down on my drug use; People annoy me by criticizing my drug use; I feel bad or guilty about my drug use; I have used drugs to improve my mood or steady my nerves. In this sample, the coefficient alpha for the D-CAGE was .85.

**ACE.** The ACE contains several questions pertaining to aversive childhood experiences, such as recurrent physical abuse, emotional abuse, and sexual abuse. In addition, it contains questions about whether the household in which a person grew up contained an alcohol or drug abuser, someone who engaged in criminal behavior, and/or someone with a mental illness, as well as questions pertaining to abuse and neglect. Research has found that ACE scores are positively correlated with social, emotional, and cognitive impairments, as well as risky health behaviors (Anda et al., 2006; Felitti et al., 1998; Hillis, Anda, Felitti, & Marchbanks, 2010; Weiss & Wagner, 1998). The ACE has also been found to be related to criminal behavior as would be predicted by many of the aforementioned theories of crime (Friestad, 2012; Friestad, Ase-Bente, & Kjelsber, 2012; Sharp, Peck, & Hartsfield, 2012). For the purpose of this study, the questions on the ACE were adapted to a Likert-type scale format to increase the psychometric sensitivity of the different subscales of the ACE,
where $1 = \text{never}$, $2 = \text{sometimes}$, $3 = \text{often}$, $4 = \text{very often}$. The coefficient alpha for the ACE in this sample was .93.

**Brief Sensation Seeking Screening–4 (BSSS-4).** The BSSS-4 is a short assessment tool pertaining to an individual’s level of sensation seeking. The BSSS-4 is strongly correlated with longer sensation seeking measures, such as the BSSS and the SS2, and has predicted risk taking behaviors among those of different ages, particularly with regard to risk taking behaviors pertaining to drug and alcohol (Stephenson, Hoyle, Palmgreen, & Slater, 2003). The average coefficient alpha for this sample was .87

**Crime Addiction Scale.** Related to this theoretical construct is the Crime Addictive Scale developed here. Its items are designed to more specifically target the above notions of sensation seeking but contextualizing the intensity of the sensation or thrill one gets out of engaging in their most frequent type of criminal behavior. The four stems following the question of “When you were just beginning your most typical kind of crime,” were (a) how much fun did you think you were going to have, (b) how exciting was it, (c) how much power did you feel, and (d) how much did you think you were going to gain? The purpose of these questions was to test a more specific type of addictions hypothesis suggesting that the degree of positive stimulation from criminal behavior is the addictive element predicting degrees of desistance. This is conceptualized as the phenotypic expression of the genotypes underlying increased trajectories toward crime. The average coefficient alpha for this sample was .92.

**Procedures**

Participants were tested in groups of approximately 25 to 35 over the course of 2 days. Each group was read each item on the questionnaire by a test proctor, and the first 10 items were read twice. The participants were asked not to work ahead, and at least one proctor observed. The additional proctor(s) also was available to answer any questions that were raised. The participants answered each question on a scantron answer sheet. The scantrons were numbered, and no identifying information was obtained. The testing process took 1 hr and 15 min. The scantron bubble answer sheets were scored electronically.

**Results**

The first set of analyses involved the use of Path analyses to test the general theories of crime outlined in the introduction. Path analysis is a theory-driven variant of structural equation modeling (SEM). It uses a confirmatory hypothesis testing approach to the multivariate analysis of a structural theory based on certain circumstances (Byrne, 1998). In this study, the large number of scales and the medium sample size allowed the use of path analyses to calculate the path estimates on each of the mediational models (Byrne, 1998).
Social Bond and Control Theories

Gottfredson and Hirschi’s (1990) theory was analyzed by a PROC CALIS correlational procedure using SAS to conduct a mediational path analysis to determine the causal effect among the above variables, measured in terms of the ACE, the Family Rigidity versus Chaos ACIQ scale, the ACIQ Control Scale, with the total Crimes reported variable serving as the dependent variable to test Gottfredson and Hirschi’s model of crime. Overall, the model did not yield a good fit across measures: $\chi^2(2) = 11.92, p < .01$, good of fit index (GFI) = .98, root mean square error of approximation (RMSEA) estimate = .14. Approximately 12.87% of the variance in Control was explained by the exogenous variables (ACE, Family Rigidity vs. Chaos) in the model. In addition, approximately 8.29% of the variance in Crime was explained by the predictor variables (ACE, Family Rigidity vs. Chaos, Control) A path diagram with standardized estimates can be viewed in Figure 1. While all three paths were significant (as can be seen in Figure 1), the overall model fell short in terms of multiple fit indices.

Thrill/Risk Seeking Theories

As with the previous model, Zuckerman’s (2007) model was tested by a PROC CALIS correlational procedure using SAS was used to conduct a mediational path analysis to test the hypothesized links among the variables Shame, Anxiety, Alcohol Use (CAGE), Drug Use (D-CAGE), Risk, and Crime. Overall, the model did not yield a good fit across all measures: $\chi^2(5) = 27.72, p < .01$, GFI = .97, RMSEA estimate = .13. Because the overall model did not have a good fit, additional analyses were not completed. A path diagram with standardized estimates and significance marked can be viewed in Figure 2.
The Attachment and Dynamic Systems Theory of Crime

The SAS PROC CALIS correlational procedure was also used to conduct a mediational path analysis to determine the causal effects among the ACE, Fun Crime, Peer Crime, the ACIQ, and Crime. Several different measures of fit are reported for each model (see McDonald and Ho, 2002, for a discussion on indices and a general discussion of Path and SEM). Overall, the model had a good fit: $\chi^2(2) = .34$, $p = .84$, GFI = .999, RMSEA estimate = .00. Approximately 38.73% of the variance in Peer Crime was explained by the exogenous (ACE, Fun Crime, ACIQ) variables in the model. The exogenous variable (ACE) also accounted for 11% of the variance in Fun Crime and 12.88% in the ACIQ. In addition, approximately 18.48% of the variance in Crime was explained by the predictor variables (Fun Crime, Peer Crime, ACIQ, ACE). A path diagram with standardized estimates and significance marked can be viewed in Figure 3. All paths were significant with the exception of the path from the ACIQ to Peer Crime.

To test the importance of individual differences as predicted by dynamic systems theories’ emphases on equifiinality, the ACIQ profiles of those who scored high on crime of assault are presented in Figures 4 to 7. Only those reporting being arrested 5 to 8 times or arrested 9+ times were examined to see whether they all exhibited the same characteristics on the ACIQ. When reading the figures, it is important to note that each profile for each prisoner is based on the normalized data of Lindberg and Thomas (2011). Based on this large control population, the mean is 100, and the standard deviation is 15. The number next to the standard score is the percentile rank. The graph to the right then shows the score on the scale with 95% confidence intervals around it such that individual graphic representations are easily viewed by the clinician or researcher. To examine the rest of the profile data, email the senior author to see how
diverse and divergent data were and that the profiles presented here are typical of the kinds of individual differences found in this population.

A second and more direct way of exploring equifinality is by examining individual ACIQ profiles of those who scored high on a particular crime like assault. If “unifinality” is the rule where profiling, personality theories, and older theories of criminology apply, then one would predict strong similarities in terms of the same kinds of attachment patterns and clinical issues evident in individuals’ high on one type of crime. A dynamic systems theory emphasizing equifinality, however, would predict that different kinds of insecurity and clinical issues would be evident in the profiles of those reporting high levels of the same crime. It is to these individual profiles that we now turn.

The first inmate in Figure 4 scored high (operationally defined here as a standard deviation above the mean) on the Avoidant and Ambivalent Mother, Father, and Partner scales. This fits well with classic attachment theory and research has shown that Avoidant individuals to be more likely to engage in assaults and be bullies (Berlin, Cassidy, & Appleyard, 2008). This individual also scored over a standard deviation higher on the scales of Sexual Arousal, Family Suppression of Feelings, Withdrawal, Denial of Feelings, Control, Shame, Anxiety, Anger, and Abusiveness. Thus, this profile is almost a classic representation of the literature testing groups at the nomothetic level. However, no other profiles perfectly matching this one were found, and as will be seen, this has important implications for intervention.

Consider next the profile in Figure 5. In contrast to the first profile, this individual was not Avoidant to either Mother or Father, but rather, would be scored as Mixed or disorganized to these figures where one is scored as mixed if they score a standard deviation or higher on two incompatible scales. For this participant, the two incompatible scales a standard deviation above the mean were Codependent and Ambivalent. Mixed attachments have also been implicated in cases of mental illness, anger, assault,
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Number of omissions: 0

Figure 4. Profile of a female criminal scoring high on the crime of abuse—Examinee 4144.

Note. Number of omissions = 0. Parentheses around each "x" are 95% confidence intervals.
### EXAMINEE: 6185

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Number of omissions: 0

**Figure 5.** Profile of a female criminal scoring high on the crime of abuse—Examinee 6185.

**Note.** Number of omissions = 0. Parentheses around each “x” are 95% confidence intervals.
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Number of omissions: 0

Figure 6. Profile of a female criminal scoring high on the crime of abuse—Examinee 61176.

Note. Number of omissions = 0. Parentheses around each “x” are 95% confidence intervals.
![Table showing profile of Examinee 61264](image)

### Figure 7.
Profile of a female criminal scoring high on the crime of abuse—Examinee 61264.

Note. Number of omissions = 2. Parentheses around each "x" are 95% confidence intervals.
and criminality (Lindberg et al., 2014; Lyons-Ruth & Jacobvitz, 2008). However, this is a different kind of attachment pattern with different kinds of attachment thoughts, feelings, and behaviors than those of one who is just Avoidant. It also needs to be pointed out that this individual in Figure 5 did not score a standard deviation above the mean of the group on Anger or Abusiveness. However, this individual did score very high on measures of Jealousy, Denial of Feelings, Rumination, Anxiety, and Shame, and very low on Peer Support.

The profile in Figure 6 did not display the same high scores of insecurity to Mother or Father, but did show a mixed pattern to Partner fitting quite nicely with the suggestions of Sampson, Laub, and Wimer’s (2006) developmental theory suggesting that partner relations are important in carving one into and out of lives of crime. This individual scored high on Anger, Abusiveness, Family Suppression of feelings, Denial of Feelings, Withdrawal and Mistrust and very low on Peer Support. This might be more in line with the social cognitive information processing theories of Dodge and Coie (1987) where interventions are geared toward helping such individuals develop more accurate theories of mind. However, this is still different than the other profiles presented thus far.

The profile in Figure 7 shows an individual who scored as Avoidant to Mother, Mixed toward Father with the interesting Secure/Codependent-Preoccupied Attachment patterns, and Mixed Avoidant, Codependent, and Ambivalent Attachments toward Partner revealing three very different attachment patterns to significant others. She also scored high on Sexual Intimacy, Sexual Arousal, Jealousy, Family Rigidity versus Chaos, Withdrawal, Denial of Feelings, Peer Support, Mistrust, Rumination, Control, Anger, and Abusiveness. Figure 7, therefore, represents a female who has many issues.

Discussion

Social Bond and Control Theories

While Gottfredson and Hirschi’s (1990) overall model did not yield a good fit, it should be noted that “control” operated in an opposite fashion to what was predicted by Gottfredson and Hirschi. Why did we empirically find the opposite result to what was expected by theory and some past data? The answer is to be found in the different measures of “control” used in this discipline. According to Grieger et al. (2012), in the criminology literature, self-control has been conceptualized in a multitude of ways (e.g., Gottfredson & Hirschi, 1990; Moffitt et al., 2011). Grieger et al. further reasoned that the measurement of self-control has been typically done by using either attitudes or behaviors analogous to the criminal behavior it is supposed to be predicting. Thus, if one wants to predict stealing, one should not use a measure of stealing as a sign of lack of impulse control, as is typically done in this literature. This would be circular, or tautologous, reasoning (Akers, 1991; Geis, 2008). Furthermore, the imprudent behaviors used in assessments of self-control correlate with one another only weakly (Tittle, Ward, & Grasmick, 2003a, 2003b), resulting in poor coefficient alphas of these variables. It should be emphasized that the ACIQ measure of control was the participant’s
need for control. In summary, when “control” was measured as something where
degrees of effortful regulation of the self by the self are used (Duckworth, 2011), then
opposite results to what was predicted by Gottfredson and Hirschi were found. This
goes beyond mere academic debate and goes to the heart of treatment as well. What is
most important with the tests of this model was that those who say that control is lack-
ing in criminals are either using the term in a circular fashion or they are wrong and
dangerously so. In terms of intervention, it is dangerous to misdiagnose, and it is even
more dangerous to misdiagnose in the opposite direction.

Thrill/Risk Seeking Theories

According to Zuckerman’s (2007) model of sensation seeking, high scores on mea-
sures of Shame and Anxiety should lead to Sensation Seeking. Sensation seeking
would then lead to Alcohol and Drug use as well as Criminal Behavior. Furthermore,
Alcohol and Drug use would increase the Criminal Behaviors by having a disinhibit-
ing effect on an individual. When tested with the more rigorous path modeling proce-
dures, these hypothesized paths did not result in a significant model.

The Attachment and Dynamic Systems Theory of Crime

As predicted, the model that was significant was the attachment and dynamic systems
theory offered here. It was found that the ACE contributed to the crime addiction scale,
peer crime, and increased individual differences in attachment and clinical issues.
These, in turn, together all led to increases in reports of criminal behavior. Thus,
whereas the older models did not work when tested by the more rigorous path analy-
ses, the present model did. (Note: It should be pointed out that tests of Agnew’s, 2005,
strain theory and Sampson and Loeb’s, 2006, age graded theory were also performed
with similar tepid results but space prohibits a full presentation. Write to the authors
for these analyses.) In addition to providing the significant path model, the present
developmental dynamic systems theory also suggests that individual differences will
be the rule rather than the exception, and it is to these notions that we will now turn.

Analyses of Individual Differences and Equifinality

A feature of the developmental dynamic systems theory of Lindberg et al. (2014) and
the path and theory presented here is the emphasis on equifinality. Equifinality sug-
gests that there can be several different developmental trajectories that lead to similar
developmental outcomes just as several different pathogens can lead to the same kinds
of cancer. This suggests that different kinds of insecurity and clinical issues can lead
to the same developmental outcome, in this case, crime.

A first prediction from this theory is that many different kinds of attachment inse-
curity and clinical issues rather than just a few would correlate with arrest reports.
From this, one would predict that there would be low but significant correlations
between all the scales of the ACIQ and crime. Examining these correlations revealed
that in looking across all crimes and scales of the ACIQ, 28 of the 29 ACIQ scales had significant correlations with the crimes. (A copy of these can be obtained by emailing the authors.)

In summary, in looking over these and the rest of the individual profiles, and in line with Lindberg et al.’s (2014) emphasis on equifinality, the profiles clearly demonstrated that there were several different developmental trajectories in attachments and clinical issues that were associated with the crime of assault. No individual matched any other, and no individual perfectly fit any kind of group mean. This approach to theory suggests that different kinds of insecurity, not just one particular type of insecurity, lead to the same developmental outcome, in this case, the crimes of assault. Thus, different patterns of insecurity and clinical issues lead to the same crime just like several different kinds of pathogens can lead to the same kind of cancer. Furthermore, in viewing the figures it is easy to see that none of the traditional models of criminology fit any of these participants very well. Furthermore, it is not hard to imagine how each of the above patterns of attachment and clinical issues eventuated in one who engaged in several criminal acts of assault. What was also striking was that not one of these individuals who gave valid responses was securely attached, which is similar to the findings of Lindberg et al. who tested adolescent males in a maximum-security prison.

This is similar to the call for dealing with individual differences as suggested by Andrews, Bonta, and Hoge (1990) and Andrews et al. (2011) who have proposed a Risk-Need-Responsivity (RNR) model of recidivism. While agreeing with this and other calls for attention to individual differences (van der Stouwe, Asscher, Stams, Dekovic, & van der Laan, 2014; Hoogsteder et al., 2014), the present approach goes one step further by not using demographic and other nomothetic variables. Rather, the present model and results suggest that attachment and clinical issues for each individual in different kinds of eco systems are the more proper focus of study. This also clarifies how one can perform more effective differential diagnoses for treatment and intervention. This is also more in line with the National Institute of Health movement toward Research Domain Criteria (RDoC) in diagnoses (Insel, 2013) rather than Diagnostic and Statistical Manual of Mental Disorders (DSM) taxonomies. This move away from the DSM is now required by the National Institutes of Health where mechanisms of change are emphasized (Insel, 2013), and the current data suggest how the ACIQ can provide such a required measure with its data on individual differences and mechanisms of action.

The above discussions also harken back to the old but still unresolved issues brought up by Cronbach’s (1957, 1975) notions of the two disciplines of psychology. According to Cronbach (1957), the correlational tradition was said to study variance among organisms while the experimental tradition was said to study variance among treatments. Cronbach (1957) went on to reason that if the traditions are kept independent, they can give only wrong answers or no answers at all. It is important to reconsider the above in terms of how one can begin to provide ways of moving from this nomothetic level to the ideographic level deduced from the path analyses and presented in the profiles and then go back again in nomothetic designs allowing for
testing of mechanisms of change harkened for years ago in our history. In the sections
that follow on interventions, it will be seen that by dealing with the individual differ-
ences found with the psychometrically derived individual differences, one can then
test these using the nomothetic approach to see whether such attention to such indi-
vidual differences improves rates of recidivism. Thus, we suggest taking the RNR
model from Andrews et al. (2011) to its logical conclusion where true responsivity to
individual differences will be measured and used instead of nomothetically derived
variables.

Limitations and Caveats

One potential problem inherent in this and similar designs could be that these inmates
did not take this seriously and did not fill out the questionnaires reliably or validly.
This possibility was examined by looking at their coefficient alphas for each of the
ACIQ and ACE scales. The results from this group were comparable with those of
typical college students taking these instruments in classroom settings. Based on the
similar high coefficient alphas between the two groups, it can be assumed that compli-
ance was not an issue.

It could also be possible that the operationalized dependent variable measure of
crime was not a robust or valid measure. For example, one could be concerned that
self-reports on the number of total crimes for which one was arrested, might be an
issue if the prisoners did not feel comfortable with full, and truthful, disclosures. While
there are always concerns about self-reports, there is some evidence that this issue was
not an overwhelming problem for this population. If one were mistrustful in reporting
crimes, then it would be expected that the ACIQ scale of mistrust would correlate
negatively with the crimes committed statistic. The opposite was found; as mistrust
increased, reports of crimes also increased. Finally, this dependent variable has shown
robust effects with other criminal populations and has passed several such validity
tests (Lindberg et al., 2014.).

Finally, it might be reasoned that the independent variables used to measure the key
constructs in social control and sensation seeking were not robust measures of the
variables in question. However, an inspection of the general correlations provides evi-
dence that seems to refute this hypothesis. (Interested readers can email the senior
author for these data.) Basically, they show that the measures introduced here correlate
at much higher levels than the more traditionally used demographic measures typically
used in the criminology literature. Thus, all variables that have been considered in the
past with the grand old theories worked; they just did not work as well as the measures
used here, and even some of these like Control did not work in the precise predicted
fashions as tested using the present more rigorous analyses.

Another limitation of this study was that which is inherent in any correlational
investigation. That is, lives of crime might produce the attachment and clinical issues
and reports of adverse childhood experiences instead of being produced by them. Path
analyses, although more sophisticated, do not get around this traditional critique of
these designs. Finally, the constructs selected to test the theories might not fully tap
what these theorists in criminology had in mind. These critiques must be kept in mind when considering the data and the rest of this discussion.

How does the present approach move from the above ideographic diagnoses to interventions that can be tested at the nomological level? It is to these most important issues in criminology, clinical psychology, and psychiatry that we now turn.

**Implications, Interventions, and Future Directions**

If individual differences are the rule rather than the exception as the path analyses and profiles suggest, then how can one design more effective early release and parole intervention programs that fit all these diverse perspectives and findings in an integrated empirically based program? Here we briefly outline an approach that might be able to combine these two traditions in a concrete example. Because it is axiomatic in most areas of medicine that effective treatments need effective differential diagnoses, one should begin with administration of the ACIQ to determine the most significant attachment and clinical issues for each individual. Therapy modules dealing with each of the 29+ issues and developmental processes involved for each issue (anger, mistrust, shame, etc.) would then be put on secured web sites where the participant would have to perform daily exercises for each diagnosed issue over extended periods of time. However, the present systems approach and path analyses suggest that such therapy alone would be minimally effective if only performed in a clinic setting. Participants would also have to have three peer recovery, 12 step, and/or family members, support people with whom they discuss the modules during each week thereby helping them form new attachments and peer supports. Thus, these interventions also borrow from criminological theories and the present model that stress “carving the criminal and addict” out of their dysfunctional peer group environments (Sampson & Laub, 2005). The first modules worked on for all would be the crime addiction and drug/alcohol addiction modules. Such approaches to intervention should “put the common factors that work best in therapy on steroids” (McLellan, McKay, Forman, Cacciola, & Kemp, 2010; Mee-Lee, McLellan, & Miller, 2010; Miller et al., 2010; Petersilia, 2004) because it would (a) focus on alliance focused processes to not only the clinician but also to three support individuals in the participant’s ecosystem in a coordinated scheme, (b) provide participant extensive feedback and monitoring through the computerized modules, (c) provide feedback and effective location monitoring to the therapist with this at least twice per week decreasing safety concerns, (d) provide support people feedback about twice per week, (e) provide individualized plans depending on their most outstanding issues (f) use a coordinated and simplified “stages of change” for each issue worked in each module, and (g) provide heavy dosages at low cost. Thus, the present suggested intervention approach combines the common factors known to produce change at a much smaller cost for higher dosage while increasing the safety concerns of the community.

The above approach focusing on individual differences can then be tested against more traditional approaches in nomothetic designs where mechanisms of change in terms of attachments, alliances, changes in secure base behaviors, changes in response
patterns to the most profound clinical issues for the individual, and so on can be tested. This should also address RDoC’s concerns of measuring mechanisms of change while giving impetus to go back to old unresolved issues in our history as well.

Summary

In summary, Gottfredson and Hirschi’s (1990) social bond and control theory and Zuckerman’s (2007) risk taking theory of criminology were tested using path model approaches. Although there were some marginally good fits, none were very robust. There was, however, a good fit for the attachment and dynamic systems path model showing how adverse childhood events lead to problems in attachment and clinical issues, increases in the crime addiction measure, and increases in peer crime exposure. This model was significant in predicting reports of criminal behavior. However, there were significant correlations between 28 of the 29 scales of the ACIQ and reported arrests suggesting several different causes of crime. An analysis of individual differences in the profile data revealed that several different kinds of insecurity and clinical issues play different roles for different prisoners arrested for even the same kinds of crime. An intervention was suggested that utilized the differential diagnostics of the ACIQ in forging a new approach to intervention that might save money and increase safety for the community.

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