



Environmental and Individual Factors in Adolescent Anti-sociality: A Structural Model of Mexican Teenagers

Martha Frías-Armenta¹ & Víctor Corral-Verdugo²

University of Sonora at Hermosillo, Mexico

Abstract

This study was aimed at analyzing the effects of individual, family, and social factors on adolescent antisociality in Mexico. The sample comprised 184 youths: half of whom were arrested by police, and the other half of whom were teenagers from the general population, matched by age and school grade to the arrested group. Arrested adolescents were interviewed in their confinement centers, while those of the control group were sampled in the school they attended. A structural equation model was used to estimate the relationships between a negative social environment, family violence, negative individual characteristics, and antisociality. Negative social environment had a positive effect on both family violence and individual characteristics; in turn, family violence affected negative individual characteristics, which then influenced antisociality. The results indicated that negative contextual variables facilitate the development of negative individual characteristics, which then puts adolescents at risk for getting involved in antisocial activities.

Keywords: School Environment, Social Context, Family Violence, Individual Characteristics, Adolescent Antisociality.

Introduction

Juvenile delinquency has increased dramatically around the world. According to the United Nations World Youth Report, (2003) in Europe, juvenile delinquency has expanded by approximately 50 %, from the middle 1980s and late 1990s, to present day. In America, Chile reported an increase of 398% from 1995 to 2000 (Fundación Paz Ciudadana, 2003), and criminality in México increased 26% from 1977 to 2007 (that is, before the eruption of the Mexican Drug War, which substantially increased general and youth delinquency). Juvenile delinquency represents 12% of the total law transgression events in Spain (Morant Vidal, 2003). Canada reported that the peak age in all crimes is 17 years old, where the rate is 14, 000 events per 100, 000 inhabitants (Police-reported crime statistics in Canada, 2009). Sixteen percent of the violent crime arrests and 26 percent of

¹ Professor, Department of Law, Division of Social Sciences, University of Sonora, Rosales y Transversal S/N, Colonia Centro, Hermosillo, Sonora, 83000, Mexico. Email: marthafrias@sociales.uson.mx

² Professor, Department of Psychology, Division of Social Sciences, University of Sonora, Rosales y Transversal S/N, Colonia Centro, Hermosillo, Sonora, 83000, Mexico. Email: victorcorral@sociales.uson.mx

property crime arrests in 2008 were committed by juveniles in the United States (Puzzanchera, 2009). In France, between 20 and 22 % of offenses were perpetrated by youths (De la Rosa Cortina, 2011). In Greece, a slight increase in juvenile delinquency has been noted (Georgoulas, 2009). In Mexico, the growing involvement of juveniles in acts of drug trafficking and drug-related delinquent behaviors (homicide, kidnapping, extortion, etc.) associated with organized crime has become more than evident. A popular theory establishes that young people are recruited by drug cartels to commit crimes, partly because most of them cannot be judged as adults if arrested by the authorities (Ogaz-Palm, 2011). Finding an inclusive set of the causes of this phenomenon and by what means it can be reduced is an imperative for society and communities around the world. These data seem to indicate that youths' involvement in crime has significantly increased, and it constitutes a serious concern for society, authorities and governments.

Antisocial behavior is defined as conduct that breaks the social contracts of a community. This type of a behavior defies the basic social structure, destroying the fundamental norms of society (Silva, 2003); it is also defined as behavior that violates social norms (Vallés, 2009). Crime and delinquency refer to all conduct prohibited by law (Quinsey, Skilling, Lalumiere, & Craig, 2002). Juvenile delinquents are those individuals under the legal age of majority who commit actions that violate the law (Burfeind & Jeglum, 2006). Antisociality, in turn, can be defined as the tendency to engage in antisocial and delinquent behavior. Quinsey, Skilling, Lalumiere, and Craig (2002) indicate that antisociality is the "individual characteristics that increase the likelihood of antisocial behavior." A number of theoretical frameworks have been considered in trying to understand what factors drive and maintain antisocial actions in young people. There are a variety of causal factors, but they can be synthesized into two inclusive categories: environmental (contextual) and personal (ontogenetic and biological).

The inclusion of both contextual and personal factors in explanatory models of human behavior is an important feature of Systems Theory (ST). ST is a holistic theoretical framework that focuses on the relationship between individuals and their environment (Ford & Lerner, 1992). A system is a complex set of interacting elements maintained by their interrelationships. Within this perspective, behavior is more than the sum of the interacting elements, and any action is perceived as having multiple causes influencing other conduct (Henggeler, Shoenwald, Borduin, Rowland, & Cunningham, 1998). Individuals are entities that actively renovate their environment while simultaneously being influenced by their context. Thus, ST offers an inclusive and powerful approach to the study of every instance of human conduct, including criminal behavior. Another holistic theoretical approach aimed at explaining behavior with an inclusive person-environment perspective is Bronfenbrenner's (1987) Ecological Theory. This model conceives the environment as a set of structures of different complexity levels, in which structures (or systems) at a more complex level contain less complex ones. Child development is the result of the relationships between those structures or systems. The first and most basic system that the child has direct contact with is the *microsystem*, which includes their family, school and neighborhood. The *mesosystem* represents relationships between the institutions that make up the microsystem. A larger social system, including neighborhood, school, and religious structures, constitutes the *exosystem*, while the *macrosystem* is the most remote system, encompassing culture and subculture, customs, and laws. In theory, all systems affect a child's behavior directly or indirectly. Belsky (1980) added a new system to the model, the *ontosystem*, which includes the individual variables.

Therefore, antisocial behavior can be similarly modeled as resulting from personal variables and their environmental systems.

Environmental variables

Familial and neighborhood environments are some of the contextual factors considered in the explanation of antisociality in youths (Cuevas del Real, 2003). Research conducted in Russia, Poland, Germany, Bulgaria, Czech Republic, Hungary, Slovakia, and Greece with 42 independent samples of middle school students (a total of 7282 participants) between the ages of thirteen and fourteen years old revealed that involvement in criminal and antisocial activities was dependent on cultural factors as well as personal experience with family and society (Boehnke, & Bergs-Winkels, 2002). A study conducted by Jacob (2006) showed that residential mobility is the most important predictor of crimes against property. Disorganization in the neighborhood is strongly related to conduct problems in children (Lambert et al., 2004). Little and Steinberg (2006) tested an opportunity model to explain their findings about the influence of poor neighborhoods and low job opportunities on adolescents' involvement in selling drugs. Martinez et al. (2008) found that drug trafficking was influenced by neighborhood-disadvantage indicators. Juveniles living in disadvantaged neighborhoods were more at risk of engaging in these kinds of activities. In addition, drug trafficking caused increased violence and social disorganization within the vicinity. Socially disorganized neighborhoods condone an individualistic parenting style and lack the formal and informal networks that provide material and social resources (Davies & Cummings, 2006)

Neighborhood structure is associated with instrumental crime; communities promoting monetary success and few legal means of reaching it generate higher crime rates, which are generally aimed at getting goods at any cost (Baumer & Gustafson, 2007). The likelihood of obtaining drugs and alcohol in the neighborhood is also linked to adolescents' antisocial behavior (Freisthler et al. 2005). A study found that the perception of a neighborhood as problematic influenced juvenile delinquency (Byrnes, et al. 2007). In addition, a longitudinal study of 359 adolescents tested three measures of social binds (conventional moral belief, attachment, and commitment/involvement) and their relationship with self-control and delinquency. The results showed that low self-control was negatively related to social binds, and the presence of deviant peers was positively related to juvenile delinquency (Longshore, 2005). Agnew (2001) argued that negative experiences in school, parental rejection, and strict parental practices are potential factors for youths' criminal behavior. Both school and home environments play an important role in juvenile delinquency, including negative peer influences, lack of attachment to school personnel (e.g., teachers, nurses), poor school achievement and attainments, and cognitive or learning difficulties (Taylor & Lopez, 2005). The school environment strongly influences the emotional and affective states of adolescents (Caldwell, et al., 2007). Kwong-Wong (2005), in research conducted in Canada with youths in school grades 5 through 12, found that family and school activities reinforced social bounds, commitment and reduced delinquency and crime association.

School engagement, which can be defined as children's participation in school activities, positive emotional disposition, and motivation to invest in school tasks, reduces school problems and general delinquency (Hirschfield, & Gasper, 2011). In addition, adolescents' school failures and lack of engagement increase the likelihood of association with deviant groups (Wong, 2005).

Another contextual variable associated with negative child development is child abuse and neglect (Egeland, et al., 2002). Child abuse, including negligence, as well as physical, emotional, and sexual abuse, is linked to violent behavior (Kingree, et al., 2003). A study presented by the National Institute of Justice reported that abused children were at 4.8 times greater risk of arrest as juvenile delinquents and 11 times more likely to be arrested for violent crimes compared to non-abused children (English et al., 2002). Parenting and parent-child interactions, as well as other family characteristics, constitute some of the strongest predictors of juvenile delinquency (Henry et al., 2001). Wiesner and Windle (2004) conducted a longitudinal study on a sample of 1218 adolescents to analyze crime-related developmental trajectories. Their findings revealed 6 different trajectories: chronic moderate and high, moderate desisting trajectory, desisting trajectory, occasional moderate and high, and sporadic offenders. Chronic high offenders displayed several factors, such as lack of family support, poor school achievement, and drug abuse. Developmental problems, such as antisocial, aggressive, and other problematic behaviors, are disproportionably found in highly conflicted families (Belsky & Jaffee, 2006).

Adolescent antisocial behavior is also influenced by peer deviance and family processes (Vazsonyi et al. 2008). A family process is related to children's social control. Parental supervision and monitoring have an indirect effect on crime and delinquency through low self control (Gibbs, Giever, & Higgins, 2003). Poor parental supervision is associated with low self-control, and low self-control is linked to deviant, antisocial, and delinquent behavior (Vazsonyi & Belliston, 2007). Low self-control was also correlated positively with deviant peer association and negatively with parental bonding (Longshore, Chang, & Messina, 2005). Exposure to peer delinquents is also associated with an adolescent's own involvement (Warr, 2002).

Child abuse, as well as housing mobility, was highly related to the likelihood of being arrested for juvenile delinquency (Baskin, & Sommers, 2011). Instability of the residence aggravates child abuse and pushes children toward crime. The negative perception of an adolescent's home environment is positively correlated with mental health problems, including depression, poor life satisfaction, stress, anxiety, and hopelessness (Field, Diego, & Saunders, 2002). A longitudinal study analyzed the relationship between child rearing practices and gang involvement in high-school students. The results showed that the psychological and behavioral control patterns of parents, as well as their affect, moderate the relationship between gang involvement and behavioral problems (Walker-Barnes, & Mason, 2004). Juvenile offenders perceived and experienced more family dysfunction and violence and poorer family dynamics than non-offenders (Kim & Kim, 2008).

Hoeve et al. (2009) carried out a meta-analysis of 161 published and non-published studies and assessed the magnitude of the relationship between parental practices and delinquency. The strongest correlations were found between psychological control, parental monitoring, hostility, parental rejection, and juvenile delinquency. Child rearing practices and parental monitoring predict adolescents' involvement in antisociality. Child abuse, parental hostility, and reject put juveniles at risk of association with criminal activities. The expressivity of parents is related to children's empathic responses, and negative affect is associated with children's distress. Children present more problems in managing their emotions when negative expressions from their parents are more intense, adverse, and frequent (Valiente et al. 2004). Children exposed to high levels of negative affect in their home environment feel more distressed and are more likely to respond negatively to others (Eisenberg, Liew, & Pidada, 2001).

Individual factors

Individual emotional and cognitive factors are also related to antisocial behavior (Overbeek, et al. 2001). The variables more highly related to juvenile delinquency are impulsivity, low self-control, depression, anxiety, attention problems, ADHD, and empathy. Empathy plays a significant role in promoting pro-social behavior and social competencies (Hoffman, 2000). Moreover, clinical and empirical evidence shows that empathy is important in the development of healthy socio-emotional functioning and is also related to pro-social behavior, mental health, and low aggression (Niec & Russ, 2002).

A six year longitudinal study conducted with 1032 youths showed an increase in emotional disturbance and delinquency in early and middle adolescence. In addition, an increase of emotional problems during adolescence was related to delinquency. A correlation was found between anxiety/depression and delinquency (Overbeek, et al. 2001). Another longitudinal study conducted by Sibley et al. (2010) with children from five to twelve years old estimated the association between attention deficit, hyperactivity disorder (ADHD), and delinquency. Four groups were diagnosed: ADHD, ADHD and oppositional behavior (ODD), ADHD and conduct disorder (CD), and a control group. Children presenting ADHD+CD exhibited the worst delinquent behaviors, while ADHD and ADHD+ODD revealed an early start of delinquency, wide range of offences and greater occurrence of severe crimes. Low self-control and peer pressure were associated with juvenile cybernetic crimes (piracy, pornography, and harassment), and association with deviant peers intensified the effects of low self-control (Holt, Bossler, & May, 2012).

Cheung and Cheung (2008) showed that, in a Chinese population, low self-control and social factors (including coercive parental practices), disrupted social bonds, delinquent associations, school under-achievement, negative school experiences, stressful life events, and negative relationships with peers are significantly related to juvenile delinquency. Impulsivity is another factor strongly related to commission of crimes by youths. Carroll et al. (2006) studied different levels of impulsivity control and found that deficits in several dimensions of such control were related to antisocial behavior. The dimensions included cognitive variables, such as the incapability to display inhibitory control and the tendency to respond quickly without thinking. Adolescents exhibiting poor mental inhibitory control and impulsivity were more likely to exhibit antisocial behavior and delinquency at a young age. High rates of impulsivity are related to antisocial behavior (Vitacco et al. 2002). A study comparing the influence of peers and impulsivity showed that adolescents with higher levels of impulsivity were more vulnerable to influences from delinquent peers (Vitulano, Fite, & Rathert, 2010). Its findings suggest a model that includes individual, familial, and social factors in the explanation of juvenile delinquency.

Most research in the area of juvenile antisociality focuses on one or two explanatory factors. The study in this paper considers four factors and their interrelations, based on an ecological perspective: three of those factors are environmental (family, neighborhood, school) and one is individual (personal characteristics, including anxiety levels, depression, inattention, ADHD, lack of empathy, low self-control, and deviant and oppositional behavior, and aggression). The study was aimed at analyzing the effects of individual and situational factors on adolescents' antisociality, but the interrelations between the explanatory factors are also analyzed. The main hypothesis was that contextual variables, such as family, neighborhood, and school structures, influence antisociality through the development of negative individual characteristics. The specific hypotheses were that (1) a

negative social environment (neighborhood and school contexts) will be positively correlated with family violence, (2) family violence in conjunction with the negative social environment will negatively impact the socio-emotional and cognitive functioning of adolescents, (3) individual characteristics will affect adolescent antisociality, and (4) contextual factors (family violence and negative social environments) will have an indirect effect on antisociality.

Method

Participants

The sample included 184 adolescents from two cities: 94 from Hermosillo city and 92 from the Monterrey city. The sample was divided into four groups: 47 were arrested for committing a crime from one city and 46 to another city; the other two groups were age and grade-in-school matched to the arrested adolescents. The entire population was Hispanic. The participants reported a mean age of 16 years old ($SD=1.2$) and a mean grade in school of 8 years ($SD=1.6$). Table 1 shows the demographic characteristics of the sample. The entire sample is of low socioeconomic status.

Instruments

The instrument included demographic variables, the Third Version of Conners' (2003) Scale and scales for measuring family violence, child abuse, antisocial behavior, self-control, empathy, and neighborhood and school environments.

The Conners' self-report (2008) scale assesses deviant and oppositional behavior, anxiety, depression, aggression, inattention, and ADHD. This instrument was modified and adapted to the Mexican sociocultural context. The adolescents responded to questions using a scale from 0 to 10, with 0 indicating "not true" (or "never happens") and 10 identifying "totally correct" (or "always happens"). The instrument was piloted in a general-population sample, and the obtained alphas for the scales ranged from .63 to .90.

Family violence: The Conflict Tactics Scale was used to measure levels of family violence. Some of the items assess the frequency of violence directed at the mothers of the interviewed adolescents from their partners. The scale's response options range from zero to six (0=never, 1=once, 2=twice, 3=three to five times, 4=six to ten, 5=eleven to twelve, 6=more than 20 times). Straus (2007) reported a mean alpha of .77 obtained from different studies.

Child abuse: The frequency of abuse was measured with the Children's Version of the Conflicts Tactics Scale (Straus, 1998). This instrument presents a sequence of abusive situations from mild to high intensity, including seven response-options from zero to six, where zero represents "never" and six means "more than 20 times." Straus reported a Cronbach's alpha of .72 for this scale.

Antisocial behavior: Twenty-five items from the Normative Deviance Scale developed by Varzonyi et al. (2001) were utilized to assess the frequency of the adolescent acting against social norms. Participants selected one out of seven response options from 0 to six, where zero means "never" and six means "more than twenty times." Varzonyi et al. (2001) stipulated that the alpha ranged from .76 to .89 among the subscales, while the alpha was .95 for the total deviance scale.

Empathy: The E-scale by Leibetseder et al. (2007) was utilized to measure empathy, a construct defined as the effort invested in identifying oneself with the feeling of others,

who could be either imaginary or real persons. The scale was constituted by 25 items, which the participants responded to by stating how much they were applicable to their experiences. The response options varied from 0 to 10, where 0 was “nothing” and 10 was “totally applicable” to described situations, such as “I feel bad when I see people crying” and “I put myself in my friends’ situation when they have problems.” Leibetseder et al. (2007) reported a Cronbach’s alpha of .80 for the scale.

Self-control: Raffaelli and Crockett’s (2003) instrument was used; it consists of 13 items derived from Self-Control Theory, which is considered a multi-dimensional factor that reveals regulation of affect, attention, and behavior. The items assess emotional volatility, regulation of attention and activities. Raffaelli and Crockett (2003) evidenced the construct validity of the instrument from results of a confirmatory factor analysis. Indications of reliability derived an alpha of .85.

School environment: This scale was constructed specifically for the present study to assess respondents’ perceptions of their school environment. The participants reported their frequency of witnessing fights at school, drug sales, dirtiness, carelessness of the school environment, etc., on a scale ranging from 0 to 10, where 0 = “nothing” and 10 = “excessively.” An alpha of .81 was obtained for this scale.

Neighborhood characteristics: To assess the characteristics of the participants’ neighborhood, the instrument created by Frías-Armenta, López-Escobar and Díaz-Méndez (2003) was administered. This is composed of 9 items that evaluate the dangerousness and neglect of the neighborhood where they live, that is, the adolescents responded to how dangerous, noisy, dirty, and dark they feel their neighborhood is. Additionally, the participants reported the frequency of drug sales in their neighborhood and the number of drunken persons they encounter, as well as the heterogeneity of the neighborhood’s social composition, on a scale from 0 to 10, where 0 is “never” and 10 is “too often.” The obtained alpha value for this scale was .80.

Procedure

The researchers talked to the participants’ parents to explain the objective of the investigation, guarantee the confidentiality of the collected information and to assure them that their children could freely end their participation at any time. Subsequently, the researchers asked participants and their parents to sign a consent form. The arrested juveniles were interviewed in their confinement centers, while the members of the control groups responded at the school they attended. Psychologists trained in interview techniques administered the instruments, which required approximately 50 minutes.

Data Analysis and model specification

Univariate statistics; means and standard deviations for the continuous variables and the frequencies of categorical variables were calculated. Cronbach’s alphas were obtained to evaluate the internal consistency of the instruments used. Indexes were computed from the average responses to the items of all scales. This procedure resulted in indexes for antisocial behavior, child abuse, aggression, deviant behavior, anxiety, oppositional behavior, depression, inattention, empathy, self-control, school environment, neighborhood environment, and partner violence. These indexes were used in the subsequent statistical analyses.

Table 1. Demographic Characteristics of the Samples

<i>Variable</i>	<i>N</i>	<i>Frequency %</i>	
City	186		
		Hermosillo	94 50.5
		Monterrey	92 49.5
Living with	184		
		Both parents	118 63.4
		Partner	5 2.7
		Friends	1 .5
		Family	28 15.1
		Father	8 4.3
		Mother	24 12.9
Mother's marital status	176		
		Single	47 25.2
		Married	94 50.5
		Divorced	26 14.0
		Widowed	9 4.8
Father's marital status	166		
		Single	47 25.3
		Married	95 51.1
		Divorced	22 11.8
		Widowed	2 1.1

A structural equation model (Bentler, 2006) was specified and tested. This model considered an “antisociality” target factor as the latent variable to emerge from the interrelations between the aggression, antisocial behavior, and deviant behavior indexes (Bentler, 2006). Three additional factors were specified: 1) “Individual characteristics,” composed of the (lack of) self-control, (lack of) empathy, inattention, depression, ADHD, oppositional behavior, and anxiety indexes; 2) “Family violence,” emerging from the correlation between the indexes of partner abuse and child abuse; and 3) “Negative social environment”, composed of the neighborhood and school environment indexes. The specified (hypothetical) model was based on the idea that higher hierarchical levels of environmental systems influence the lower levels. Therefore, the model predicted an effect

of the negative social environment on family violence and the individual characteristics of the juveniles, while family violence would affect both the individual characteristics and the target factor of antisociality. Antisociality should also be influenced by the more general individual characteristics of the adolescents.

Statistical and practical indicators were computed to assess the goodness of fit of the proposed model. The *Chi square* (X^2) statistical indicator was used to determine the difference between the proposed theoretical model and the saturated one (which is computed from the total interrelations between the investigated variables). If the theoretical model is pertinent, it will not significantly differ from the saturated one; therefore, the X^2 will produce a value of low to no significance ($p > .05$). However, X^2 is susceptible to sample size, sometimes indicating significance merely as a function of the number of participants (Bentler, 2006). Consequently, practical indicators are considered that are not especially sensitive to sample size in assessing a model's adequacy. Practical indicators include the Bentler-Bonett Normed Fit Index (BNFI), the Bentler-Bonett Non-Normed Fit Index (NNFI), and the Comparative Fit Index (CFI), among others. The minimal level of acceptance of goodness-of-fit for these indicators is a value of .90. The Root Mean-Square Error of Approximation (RMSEA) is also considered in this context. An RMSEA of less than .08 is taken as evidence of goodness of fit (Browne & Cudeck, 1993).

Results

Table 2. Cronbach's Alphas for scales used in this study

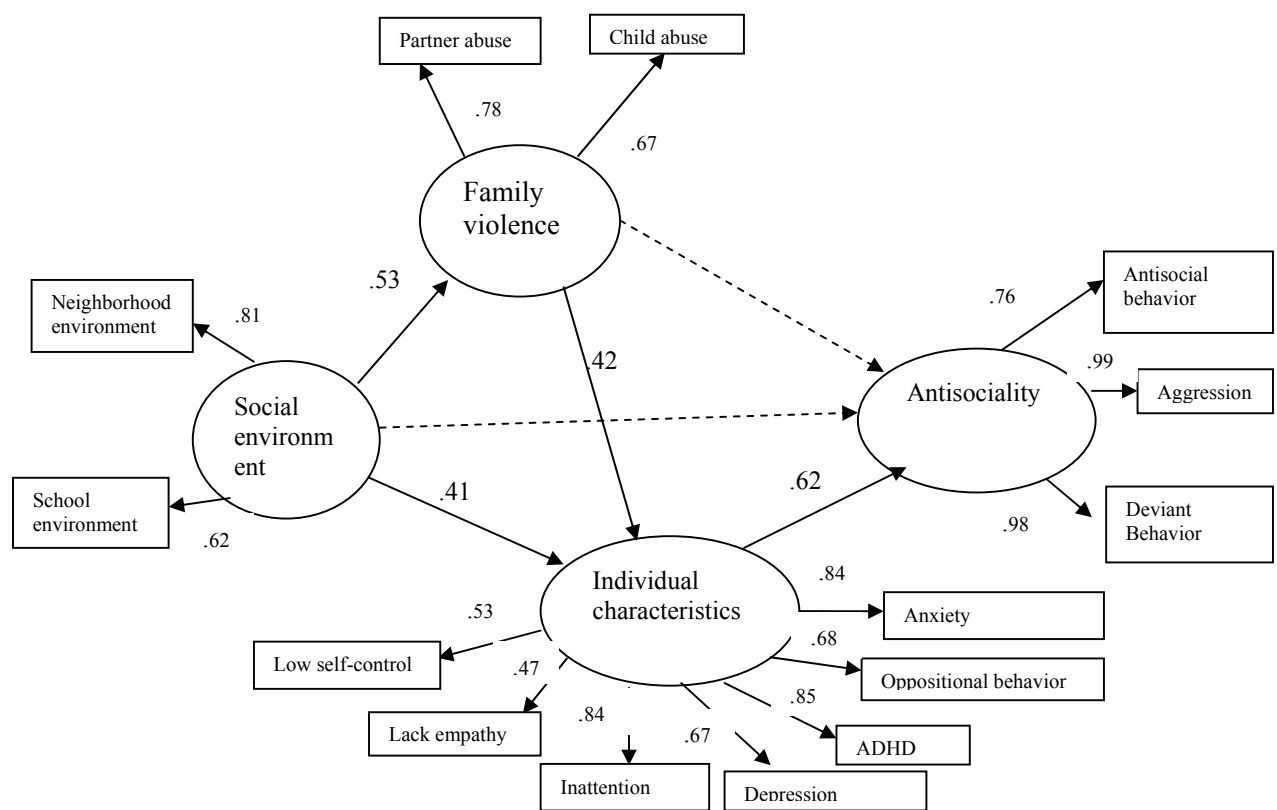
<i>Scale</i>	<i>Alpha</i>
School environment	.79
Neighborhood environment	.86
Child abuse	.90
Partner violence	.94
Antisocial behavior	.94
Aggression	.91
Deviant behavior	.90
Anxiety	.63
Oppositional behavior	.76
ADHD	.85
Depression	.73
Inattention	.89
Empathy	.93
Self-control	.86

Table 2 shows the Cronbach's alphas for the used scales. All alphas were higher than .60, which is the minimum acceptable to claim reliability. "Yelling" (M=2.28, SD=3.8) and "swearing or cursing" (M= 2.01, SD=2.9) were the most reported indicators of child abuse. The "insults" item (M=1.4, SD=2.7), in turn, produced the highest mean of the

violence-between-parents items. Adolescents perceived the neighborhood where they live as “dangerous,” according to their response to this item (M=4.66, SD=3.38) and their perception of drug sales as “serious” (M=4.83, SD=4.0). “Escaping from home” (M=3.44, SD=3.9), “problems with the police” (M=3.29, SD=3.78), and “quitting school” (M=3.11, SD=3.36) produced the highest averages of self-reported antisocial behavior. The most frequently admitted antisocial behaviors were “running away from school, home, and work” (M=2.75, SD=2.19), “fighting with bare hands” (M=2.40, SD=2.11), and “answering rudely to superiors” (M=2.18, SD=2.03).

Structural Equation Model

Figure 1. Structural model of determinants of adolescent antisocial behavior



$$X^2 = 197.15, DF = 71, p < 0.001; BBNFI = .90, \\
 BBNNFI = .91, CFI = .93; RMSEA = .07; R^2 = .67$$

All the factor loadings (λ) connecting the indicators (indexes) with their corresponding latent variables resulted salience and significance ($p < .05$). This was the case for the “Negative Environment” factor loadings emerging from the “neighborhood environment” ($\lambda = .81$) and “school environment” ($\lambda = .81$) indexes. The “Family violence” factor also received significant loadings from “child abuse” ($\lambda = .67$) and “partner violence” ($\lambda = .78$). In turn, “self-control” ($\lambda = .53$), “lack of empathy” ($\lambda = .47$), “inattention” ($\lambda = .84$), “depression” ($\lambda = .67$), “oppositional behavior” ($\lambda = .68$),

“ADHD” ($\lambda = .85$), and “anxiety” ($\lambda = .84$) significantly and saliently loaded on the “Individual Characteristics” factor. Lastly, the “Antisociality” latent variable received salient loadings from the “deviant behavior” ($\lambda = .67$), “aggression” ($\lambda = .67$) and “antisocial behavior” ($\lambda = .67$) indexes.

The structural model shows that the adolescents’ individual characteristics had a positive effect on their antisociality (structural coefficient = .62) and family violence (structural coefficient = .42), while a negative social environment affected the youths’ individual characteristics (structural coefficient = .41). Negative social environment also produced an effect on family violence (structural coefficient = .53). No influence on antisociality was found from either family violence or negative social environment, yet an indirect effect was produced through individual characteristics. The X^2 value = 197.15 was significant ($p < 0.001$); however, the practical indicators revealed the goodness of fit of the model because they were higher than .90 and the RMSEA result was $< .07$. The model produced a $R^2 = .67$, indicating that 67% of the antisociality variance is explained by negative individual characteristics, a negative social environment, and family violence.

Discussion and Conclusion

The proposed explanatory model of adolescents’ antisociality fits the data well and reveals that youth delinquency is caused by multiple factors at diverse ecological levels, including personal and environmental variables. The testing of this model confirmed that antisociality was directly affected by youths’ individual characteristics (hypothesis 3). Family violence and negative social environments (school and neighborhood) had indirect effects on adolescents’ deviant behavior through individual characteristics. The negative social environment also affected both the level of family violence and the negative individual characteristics of the young respondents, whereas family violence had an impact on those individual characteristics. These results support hypotheses 1 and 2. Although direct effects of the social and family environments on the antisociality factor (hypothesis 4) were expected, they were not confirmed by our data. Contextual variables, such as family violence and negative social environments, exert their influence on antisociality through the psychological problems (negative individual characteristics) experienced by adolescents. In our model, individual characteristics were the only factor that directly affected antisociality. This could at least partially explain why some child abuse victims do not become delinquents: the effects of adverse environments are internalized as emotional or behavioral problems, instead of being externalized as antisocial conduct. However, these internalized effects could eventually lead to maladjusted social behavior. Laird et al. (2001) argued that behavioral problems are likely to emerge in insecure environments, where children develop problematic individual characteristics that are manifested during adolescence as antisociality (Longshore, 2005). For this reason, disorganization, insufficiency of resources, and poverty in neighborhoods, as well as high mobility of residents, produce high criminality environments (Freisthler et al., 2005; Grunwald et al., 2010).

An alternative interpretation of these findings is that antisociality can be considered as another component of the negative individual characteristics of the adolescents. This target variable in our model is an additional indicator of those characteristics; thus, antisociality would be included in the more general construct of negative individual characteristics. In this case, the interpretation of results would be that the effects of family, neighborhood, and school environments on antisociality are direct, indeed.

In the study reported here, negative social environment was indicated by the respondents' perception of dangerousness in their school and neighborhood. This perception is strongly related to the levels of delinquency in their neighborhoods and schools (Byrnes et al., 2007). Caldwell, Sturges and Silver (2007) argued that the school environment is also a powerful predictor of the emotional and affective states of the adolescents. The perception of dangerousness in the environment initiates anxiety, depression, and low self-control, and these psychological problems, in turn, incite people's involvement in antisocial behavior (Boehnke, & Bergs-Winkels, 2002).

A negative family environment also produces behavioral, emotional, and affective problems in juveniles (Kim & Kim, 2008). Antisocial adolescents perceive more abuse in their homes than their non-antisocial counterparts (Field, Diego, & Saunders, 2002). The effect of a negative neighborhood on family functioning is manifested as a relationship in which unfavorable environments directly influence the development of maladjusted family interactions, including child abuse and inter-partner violence. Parental control, affect, and monitoring may help counteract this consequence (Kim & Kim, 2008; Noyori-Corbett, & Seek Moon, 2010).

The "individual characteristics" factor in this study included a number of emotional, behavioral and cognitive problematic features of the respondents. Attentional problems, as well as lack of self-control, impulsivity, depression, and anxiety, were among these problems, which then proved to incite juveniles' antisociality. Overbeek et al. (2001) assured that the adolescents' emotional problems are related to delinquency. Impulsivity is similarly associated with antisocial behavior (Vitulano, Fite, & Rathert, 2010). Self-control is one of the most studied variables in the origination of juvenile delinquency; a failure of self-control is an important condition in the development of antisociality (Holt, Bossler, & May, 2012). Likewise, attention and hyperactivity problems appear to be highly correlated to antisocial behavior and crime (Molina et al. 2007). All of these variables had effects on the antisociality of adolescents.

This model includes contextual as well as individual variables in the explanation of adolescent antisociality, emphasizing the importance of ontosystemic (i.e., personal) and environmental variables in the understanding of this phenomenon. The R^2 of the model was .67, implying that this ecological representation predicts approximately two-thirds of the variance in juvenile antisociality. Further studies should incorporate additional contextual (e.g., economic, educational, normative) and individual variables aimed at increasing the explanatory power of youth antisociality models. In the case of the Mexican context, special emphasis should be put on those factors that purportedly influence the involvement of young people in organized delinquency activities because these types of antisocial acts heavily affect Mexican society currently. Additionally, the findings of this study could be useful in designing interventional and preventive strategies and in specifying prospective models for future studies.

Limitations

One of the limitations of this study is that it is solely based on self-reporting from the studied adolescents. Self-reports are recognized as limiting the validity of behavioral assessments; thus, caution should be used in interpreting the results of the reported research, and further studies, including alternative methods, should be implemented. The study was conducted in two cities in northern Mexico; they are not necessarily

representative of the general Mexican population. Therefore, the generalization of these results may be limited to the social contexts of the cities considered in this study.

Conflict of Interest

The authors do not report any conflict of interest.

References

- Agnew, R. (2001). Building on the foundation of general strain theory: specifying the types of strain most likely to lead to crime and delinquency. *Journal of Research in Crime and Delinquency*, 38, 319–361.
- Baskin, D. R. & Sommers, I. (2011). Child Maltreatment, Placement Strategies, and Delinquency. *American Journal of Criminal Justice*, 36 (2), 106–119.
- Baumer, E. P., & Gustafson, R. M. (2007). Social organization and instrumental crime: Assessing the empirical validity of classic and contemporary anomie theories. *Criminology*, 45, 617–664.
- Belsky, J. (1980). Child maltreatment: An ecological integration. *American Psychologist*, 35 (4), 320–335.
- Belsky, J., & Jaffee, S. R. (2006). The multiple determinants of parenting. In EnD. Cicchetti & D. Cohen (Eds.), *Developmental Psychopathology: Risk, disorder and adaptation* (pp. 38–85). Hoboken, N.Y.: John Wiley and Sons.
- Bentler, P. M. (2006). *EQS 6 Structural Equations Program Manual*. Encino, CA: Multivariate Software Inc.
- Bronfenbrenner, U. (1987). *La Ecología del Desarrollo Humano*. Madrid, Spain: Editorial Paidós.
- Boehnke, K. & Bergs-Winkels, D. (2002). Juvenile Delinquency under Conditions of Rapid Social Change. *Sociological Forum*, 17, 57–79.
- Browne, M. N. & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp.136–162). Newbury Park, CA: Sage.
- Byrnes, F. H., Chen, M., Miller, B. A., & Maguin, E. (2007). The Relative Importance of Mothers' and Youths' Neighborhood Perceptions for Youth Alcohol Use and Delinquency. *Journal of Youth and Adolescence*, 36, 649–659. DOI 10.1007/s10964-006-9154-2.
- Caldwell, R. M., Sturges, S. M. & Silver, N. C. (2007). Home versus School environments and their influence on the affective and behavioral states of African American, Hispanics, Caucasian Juvenile Offenders. *Journal of Child and Family Studies*, 16, 125–138.
- Carroll, A. Hemingway, F., Bower, J., Ashman, A., Houghton, S., & Durkin, K. (2006). Impulsivity in Juvenile Delinquency: Differences Among Early-Onset, Late-Onset, and Non-Offenders. *Journal of Youth and Adolescence*, 35, 519–529. DOI: 10.1007/s10964-006-9053-6
- Cheung, N., & Cheung, Y. W. (2008). Self-control, social factors, and delinquency: A test of the General Theory of crime among adolescents in Hong Kong. *Journal of Youth and Adolescence*, 37, 412–430.
- Conners, K. (2008). *Conners Rating Scales-Revised (CRS-R), Manual*. San Antonio, TX: Pearson education.

- Cuevas del Real, M. (2003). Los factores de riesgo de la prevención de la conducta antisocial. In A. Silva (Ed.), *Conducta Antisocial: un Enfoque Psicológico* (pp. 25-64). Mexico: Editorial Pax.
- Davies, P. T., & Cummings, E. M. (2006). Interparental Discord, Family Process, and developmental Psychopathology. In En D. Cicchetti & D. Cohen (Eds.), *Developmental Psychopathology: Risk, disorder and adaptation* (pp. 86-128). Hoboken, N.Y.: John Wiley and Sons.
- De la Rosa Cortina, J. M. (2011). El fenómeno de la delincuencia juvenil: causas y tratamientos. Retrieved August 15, 2011 from <http://www.encuentros-multidisciplinares.org/revistan%c2%ba13/jos%c3%a9%20miguel%20de%20la%20rosa%20cortina.pdf>.
- Egeland, B., Yates, T., Appleyard, K., & Van Dulmen, M. (2002). The long-term consequences of maltreatment in the early years: A developmental pathway model to antisocial behavior. *Children's Services: Social Policy, Research, and Practice*, 5, 249-260.
- Eisenberg, N., Liew, J., & Pidada, S. U. (2001). The relations of parental emotional expressivity with quality of Indonesian children's social functioning. *Emotion*, 1, 116-136.
- English, D., Widom, C., & Branford, C. (2002). *Childhood victimization and delinquency, adult criminality, and violent criminal behavior: A replication and extension*. Washington, DC: National Institute of Justice.
- Field, T., Diego, M., & Sanders, C. (2002). Adolescents' parent and peer relationships. *Adolescence*, 37, 121-130.
- Ford, D., & Lerner, R. (1992). *Developmental systems theory: An integrative approach*. Newbury Park, CA: Sage.
- Freisthler, B., Needell, B., & Gruenewald, P. J. (2005). Is the physical availability of alcohol and illicit drugs related to neighborhood rates of child maltreatment? *Child Abuse and Neglect*, 29, 1049-1060.
- Frías-Armenta, M., López-Escobar, A., y Díaz-Méndez. (2003). Predictores de la Conducta antisocial juvenil: un modelo ecológico. *Estudios de Psicología*, 8(1), 15-2.
- Fundación P. C. (2003). Delincuencia Juvenil en Chile: Tendencias y desafíos. Retrieved August 15, 2011 from http://www.pazciudadana.cl/docs/pub_20091114185009.pdf.
- Gibbs, J. J., Giever, D., & Higgins, G. E. (2003). A test of Gottfredson and Hirschi's General theory using structural equation modeling. *Criminal Justice and Behavior*, 30, 441- 458.
- Georgoulas, S. (2009). Youth and crime in the Greek context. *International Journal of Academic Research*, 1, 170-180.
- Grunwald, H. E., Lockwood, B., Harris, P. W., & Mennis, J. (2010). Influences of Neighborhood Context, Individual History and Parenting Behavior on Recidivism among Juvenile Offenders. *Journal of Youth and Adolescence*, 39(9), 1067-1079.
- Henggeler, S. W., Shoenwald, S. K., Borduin, C. M., Rowland, M. D., & Cunningham, P.B. (1998). *Multisystemic Treatment of Antisocial Behavior in Children and Adolescents*. New York: The Guilford Press.
- Henry, D. B., Tolan, P. H., & Gorman-Smith, D. (2001). Longitudinal family and peer group effects on violence and nonviolent delinquency. *Journal of Clinical Child Psychology*, 30, 172-186.

- Hirschfield, P. J., & Gasper, J. (2011). The Relationship between School Engagement and Delinquency in Late Childhood and Early Adolescence. *Journal of Youth and Adolescence*, 40, 3–22. DOI 10.1007/s10964-010-9579-5.
- Hoeve, M., Dubas, J. S., Eichelsheim, V. I., van der Laan, P. H., Smeenk, W. & Gerris, J. M. R. (2009). The Relationship Between Parenting and Delinquency: A Meta-analysis. *Journal of Abnormal Child Psychology*, 37, 749–775. DOI 10.1007/s10802-009-9310-8.
- Hoffman, M. L. (2000). *Empathy and moral development: Implications for caring and justice*. Cambridge, England: Cambridge University Press.
- Holt, T. J., Bossler, A. M., & May, D. C. (2012). Low self-control, deviant peer associations, and juvenile cyberdeviance. *American Journal of Criminal Justice*, September 2012, 37(3), 378–395.
- Kim, H. S., & Kim, H. S. (2008). The impact of family violence, family functioning, and parental partner dynamics on Korean juvenile delinquency. *Child Psychiatry Human Development*, 39(4), 439–53. DOI: 10.1007/s10578-008-0099-4.
- Kingree, J. B., Phan, D., & Thompson, M. (2003). Child maltreatment and recidivism among adolescent detainees. *Criminal Justice & Behavior*, 30, 623–643.
- Kwong-Wong, S. (2005). The Effects of Adolescent Activities on Delinquency: A Differential Involvement Approach. *Journal of Youth and Adolescence*, 34(4), 321–333. DOI: 10.1007/s10964-005-5755-4.
- Laird, R. D., Jordan, K. Y., Dodge, K. A., Pettit, G. S., & Bates, J. E. (2001). Peer rejection in childhood, involvement with antisocial peers in early adolescence, and the development of externalizing behavior problems. *Development and Psychopathology*, 13, 337–354.
- Lambert, S. F., Brown, T. L., Phillips, C. M., & Ialongo, N. S. (2004). The relationship between perceptions of neighborhood characteristics and substance use among urban African American adolescents. *American Journal of Community Psychology*, 34, 205–218.
- Leibetseder, M., Laireiter, A., & Köller, T. (2007). Structural analysis of the E-scale. *Personality and Individual Differences*, 42, 547–561.
- Little, M., & Steinberg, L. (2006). Psychosocial Correlates of Adolescent Drug Dealing in the Inner City: Potential Roles of Opportunity, Conventional Commitments, and Maturity. *Journal of Research in Crime & Delinquency*, 43(4), 357–386.
- Longshore, D., Chang, E. & Messina, N. (2005). Self-Control and Social Bonds: A Combined Control Perspective on Juvenile Offending. *Journal of Quantitative Criminology*, 21, 419–437. DOI: 10.1007/s10940-005-7359-2.
- Martinez, R., Rosenfeld, R., & Mares, D. (2008). Social disorganization, drug market activity, and neighborhood violent crime. *Urban Affairs Review*, 43, 846–874.
- Morant Vidal, J. (2003). La delincuencia juvenil. Retrieved August 16, 2011 from <http://noticias.juridicas.com/articulos/55-Derecho%20Penal/200307-58551523610332031.html>.
- Molina, B. S. G., Pelham, W. E., Gnagy, E. M., Thompson, A. L., & Marshal, M. P. (2007). Attention-Deficit/Hyperactivity Disorder Risk for Heavy Drinking and Alcohol Use Disorder Is Age Specific. *Alcoholism: Clinical and Experimental Research*, 31(4), 643–654. DOI: 10.1111/j.1530-0277.2007.00349.x.
- Niec, L. N., & Russ, S. W. (2002). Children's internal representations, empathy, and fantasy and fantasy play: A validity study of the SCORS-Q. *Psychological Assessment*, 14, 331–338. DOI: 10.1032/1040-3590.14.3.331.

- Noyori-Corbett, C., & Seek Moon, S. (2010). Multifaceted Reality of Juvenile Delinquency: An Empirical Analysis of Structural Theories and Literature. *Journal of Child Adolescent and Social Work, 27*, 245–268.
- Ogaz-Palm, M. (2011). Stolen youth: The drug war in México. Retrieved on August, 2012 from <http://internalvoices.org/2012-04-03-15-06-07/14th-youth-and-the-un/item/58-stolen-youth-the-drug-war-in-mexico>
- Overbeek, G., Vollebergh, W., Wim Meeus, W., Rutger Engels, R., & Luijpers, E. (2001). Course, Co-Occurrence, and Longitudinal Associations of Emotional Disturbance and Delinquency From Adolescence to Young Adulthood: A Six-Year Three-Wave Study. *Journal of Youth and Adolescence, 30*, 401–426.
- Puzzanchera, C. (2009). *Juvenile arrests 2008*. Juvenile Justice Bulletin. Washington, DC: Office of Juvenile Justice and Delinquency Prevention, 2009. Retrieved August 16, 2011 from www.ncjrs.gov/pdffiles1/ojjdp/228479.pdf
- Police-reported crime statistics in Canada, (2009). Retrieved August 16, 2011 from <http://www.statcan.gc.ca/pub/85-002-x/2010002/article/11292-eng.htm>.
- Raffaelli, M. & Crockett, L. J. (2003). Sexual Risk Taking in Adolescence: The Role of Self-Regulation and Attraction to Risk. *Developmental Psychology, 39*, 1036–1046.
- Quinsey, V. L., Skilling, T. A., Lalumiere, M. L., & Craig, W. M. (2002). *Juvenile Delinquency: Understanding the origins of individual differences*. Washington, D C.: American Psychological Association.
- Sibley, M. H., Pelham, W. E., Molina, B. S. G., Gnagy, E. M., Waschbusch, D. A., Biswas, A., MacLean, M. G., Babinski, D. E., & Karch, K. M. (2011) The delinquency outcomes of boys with ADHD with and without comorbidity. *Journal of Abnormal Child Psychology, 39*, 21–32. DOI 10.1007/s10802-010-9443-9.
- Straus, M. A., Hamby, S. L., Finkelhor, D., Moore, D. W., & Runyan, D. (1998). Identification of Child Maltreatment with the Parent-Child Conflict Tactics Scales: Development and Psychometric Data for a National Sample of American Parents. *Child Abuse & Neglect, 22*, 249– 270. DOI: 10.1016/S0145-2134(97)00174-9.
- Straus, M. A. (2007). Conflict Tactics Scales. In N. A. Jackson (Ed.), *Encyclopedia of Domestic Violence* (pp. 190 – 197). New York: Routledge.
- Taylor, R. D., & Lopez, E. I. (2005). Family management practice, school achievement, and problem behavior in African American adolescents: Mediating processes. *Applied Developmental Psychology, 26*, 39–49.
- Valiente, C., Eisenberg, N., Fabes, R.A., Shepard, S. A., Cumberland, A. & Loyosa, S. H. (2004). Prediction of children’s empathy-related responding from their effortful control and parents’ expressivity. *Developmental Psychology, 40*, 911–926. DOI: 10.1037/0012-1649.40.6.911.
- Vallés, J. (2009). *Manual del educador social*. Madrid: Pirámide.
- Vazsonyi, A. T., Trejos-Castillo, E., & Young, M. A. (2008). Rural and non-rural African American youth: Does context matter in the etiology of problem behaviors. *Journal of Youth & Adolescence, 37*, 798–811.
- Vazsonyi, A.T., Pickering, LL. E., Junger, M., Hessing, D. (2001). Empirical test of a General Theory of Crime: A four-nation comparative study of Self-Control and the prediction of deviance. *Journal of Research Crime and Delinquency, 38*, 91- 131. DOI: 10.1177/0022427801038002001.

- Vazsonyi, A. & Belliston, L. M. (2007). The Family → Low, Self-Control → Deviance: A Cross-Cultural and Cross-National Test of Self-Control Theory. *Criminal Justice And Behavior*, 34, 505-530. DOI: 10.1177/0093854806292299.
- Vitacco, M. J., Neumann, C. S., Robertson, A. A., & Durrant, S. L. (2002). Contributions of impulsivity and callousness in the assessment of adjudicated male adolescents: A prospective study. *Journal of Personality. Assessment Special Series Personality Autobiographies*, 78, 87-103.
- Vitulano, M., Fite, P., & Rathert, J. (2010). Delinquent Peer Influence on Childhood Delinquency: The Moderating Effect of Impulsivity. *Journal of Psychopathology and Behavioral Assessment*, 32, 315-322.
- Walker-Barnes, C. J. & Mason, C.A. (2004). Delinquency and Substance Use among Gang-Involved Youth: The Moderating Role of Parenting Practices. *American Journal of Community Psychology*, 34, 235-250.
- Warr, M. (2002). *Companions in crime: The social aspects of criminal conduct*. New York: Cambridge University Press.
- Wiesner, M. & Windle. M. (2004). Assessing Covariates of Adolescent Delinquency Trajectories: A Latent Growth Mixture Modeling Approach. *Journal of Youth and Adolescence*, 33, 431-442.
- Wong, S. K. (2005). The effects of adolescent activities on delinquency: A differential involvement approach. *Journal of Youth and Adolescence*, 34, 321-333.
- World Youth Report. (2003). Juvenile delinquency (Chapter 7). Retrieved August 15, 2011 from <http://www.un.org/esa/socdev/unyin/documents/ch07.pdf>.