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HANDBOOK OF **CRIME** CORRELATES

LEE ELLIS • KEVIN BEAVER • JOHN WRIGHT

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Handbook of Crime Correlates

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Academic Press is an imprint of Elsevier



Academic Press is an imprint of Elsevier
The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK
525 B Street, Suite 1900, San Diego, California 92101-4495, USA
32 Jamestown Road, London NW1 7BY, UK

First edition 2009

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British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloguing in Publication Data

A catalogue record for this book is available from the Library of Congress

ISBN-13: 978-0-12-373612-3

For information on all Academic Press publications
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Printed and bound in the USA

09 10 11 12 10 9 8 7 6 5 4 3 2 1

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In what size cities are crime rates the highest and lowest, or does the answer depend on what part of the world is being studied? Are there societies in which females are more involved in crime than males? Is child abuse victimization more common among offenders than among relatively law-abiding persons? What is the relationship between the state of the economy in a country and its crime rate? Are religious people involved in crime to a lesser or greater degree than nonreligious people, or does the answer depend on which religion is being considered? Do persistent offenders have brains that function differently than those of persons in general?

The above questions are among thousands that have been scientifically investigated by criminologists and other social/behavioral scientists over the past two centuries. This book has been organized and written to provide a documented summary of what is currently known (always with varying degrees of certainty) regarding variables associated with criminal (and delinquent) behavior. Additionally, evidence concerning closely related factors such as clinically-diagnosed antisocial personality disorder is also provided. In assembling the studies cited in this book, no restrictions were made regarding the types of variables examined nor the countries or time periods involved.

CHAPTER STRUCTURE

The book consists of more than 400 tables pertaining to different variables that have been investigated regarding their possible relationship to criminality. These tables are organized into the following nine chapters:

- Chapter 1 – Pervasiveness and Intra-Offending Relationships
- Chapter 2 – Demographic Correlates
- Chapter 3 – Ecological and Macro-Economic Factors
- Chapter 4 – Family and Peer Factors
- Chapter 5 – Institutional Factors
- Chapter 6 – Personality and Behavioral Factors
- Chapter 7 – Cognitive Factors
- Chapter 8 – Biological Factors
- Chapter 9 – Crime Victimization and Fear of Crime
- Chapter 10 – Grand Summary

Accompanying each table is a narrative that provides a description of how each variable appears to be related to offending probabilities.

LOCATING RELEVANT PUBLICATIONS

A variety of methods were used to locate scientific publications on criminality, including previously published reviews, internet searches, interlibrary loan material, and simply by thumbing through journals. Nevertheless, the most heavily relied on source was *Current Contents*. This electronic publication was searched each week by setting the search parameters so as to flag all publications containing words such as *crime*, *delinquency*, and *antisocial*, as well as related words such as *aggression* and *violence*. After visually screening these flagged publications, copies of the articles that appeared to be genuinely relevant were sought either directly from their authors or from library sources. In this way, approximately 25 new articles were identified every week.

A key feature of the scientific method is that current research builds on past research of a related nature. This feature has made it possible for us to rely fairly heavily on literature reviews in contemporary research reports to obtain information about past studies. If everything appeared accurate and credible in these secondary citations, they too were included in the book's tables. When doubts arose concerning the accuracy of a secondary citation or more details were needed, copies of the relevant primary sources were obtained.

STRUCTURE OF THE TABLES

Virtually all studies linking variables to criminal and related behavior are presented within tables, even if only one relevant study was located. This allows readers to obtain a quick visual picture of the weight of evidence for a particular relationship that may be of interest. Accompanying each table is a narrative that provides a written description of the general nature of each variable's relationship to offending behavior according to the available research findings.

Most of the tables throughout this book have a very similar format. Along the left margin appears three possible options regarding a variable's relationship to criminality: *positive*, *not significant*, or *negative*. A positive relationship would be one in which increases in a variable increases, involvement in crime also increases. A negative (or inverse) relationship would be one in which increases in a variable would be associated with decreases in offending.

Across the top of most tables, the following types of officially detected offense categories are identified: *violent crime, property crime, drug offenses, sex offenses, delinquency, general and adult offenses, and recidivism*. Two additional offense categories are listed across the top of most tables; these pertain to self-reported (rather than officially detected) offending: *overall offenses* and *illegal drug offenses*.

The above paragraph pertains to the book's "main tables". However, many variables will also have a second table pertaining to it. In these second tables, evidence regarding traits that are often associated with criminality is considered. Put another way, these secondary tables link variables not to criminality per se, but to variables that have been repeatedly found *related* to criminality. The clearest example is a clinical conditions known as *antisocial behavior* (or *antisocial personality disorder*) or its childhood manifestation, known as *conduct disorder*. Other examples that are considered in these secondary tables include *physical aggression, cognitive and personality factors, alcoholism, drug abuse* (regardless of legality), *mental illness, mental disorders, familial factors, physiological factors, and biochemical factors*.

To enable readers to look for possible cultural variations in the research findings, the country within which each study was conducted is indicated. When special subpopulations were sampled, racial or ethnic identifiers appear in parentheses immediately following the relevant citation.

Countries are organized with regard to the region of the world in which they are located. The regional categories used were as follows: *Africa, Asia, Europe, Latin America, Middle East, North America, and Oceania* (the latter encompassing primarily islands in the Pacific and Indian Oceans). In some cases, islands were subsumed under nearby continents. For example, Britain and Iceland were listed under *Europe*, while both Japan and Taiwan were considered part of *Asia*. All of the American countries and islands of the Caribbean in which Spanish or Portuguese are the dominant languages were subsumed under *Latin America*. Hawaii was considered part of *Oceania* when information was available for it specifically; otherwise its data were treated simply as part of the *United States*.

Over 99% of the research was based on human subjects. Most of the exceptions were in Chapter 8 on biology, especially pertaining to studies of aggression. Citations to studies of nonhuman animals are included in the tables according to species (or species type) rather than according to the country in which they lived.

WHAT CONSTITUTES PUBLISHED RESEARCH

The basic criterion used for including research findings in this book was that the findings must have been published.

The criteria used to consider a study as having been *published* included having appeared in the form of a journal article or book. Dissertations were also considered "published", but master's theses and conference papers were not unless they appeared in a formally bound proceedings book available through library sources. Material that was available only on the internet without paper copies being available through public library sources was not considered "published".

THE BOOK'S ANALYTIC CHARACTER

We believe that this book constitutes a meta-analysis since it is a "a study of studies". Perhaps the best description for the approach taken by the book is that it is a *type* of meta-analysis which uses a *ballot-box* or vote-counting methodology (Hedges & Olkin 1985:47; Jarvis 1992:1252). What qualifies a study to "cast a vote" is the fact that it was published as an empirical investigation. Each "vote" can be for one of three outcomes: *positive, negative, or no significant difference*. Rather than attempting to adjust each study's finding according to the sample size on which the sample was based, each finding carries the same weight as all others. Nevertheless, in some of the narratives surrounding a table, comments are sometimes made to suggest that some qualitative assessments are in order.

There were three reasons the ballot-box approach was adopted instead of the more conventional (effect size) type of meta-analysis. First, the ballot-box approach is easier in the sense that one only needs to determine if a particular relationship is statistically significant and its "direction" (i.e., positive or negative). No adjustments had to be made for variations in a study's sample size or other measures of statistical power. Second, a conventional meta-analysis does not lend itself well to accommodating variations over time or from one culture to another. This is because the conventional meta-analysis involves pooling results from all of the available studies into a single statistic. Detecting temporal and especially cultural variations was something we considered important to preserve because one of the hoped-for outcomes of this book is to begin revealing the extent to which correlates of crime are culturally universal. Third, when compared to the more conventional type of meta-analysis, the vote-counting version lends itself to being much more easily updated as additional studies are reported.

STATISTICAL SIGNIFICANCE

Despite its limitations, the concept of *statistical significance* has been, and continues to be, a valuable tool for scientists who must base nearly all of their research findings on samples. Throughout this book, we have relied on whatever statistical significance test a researcher used in a particular study unless specifically indicated otherwise. In

the vast majority of cases, this means that the maximum degree of sampling error allowed was .05. Nearly all of the studies cited assumed the more conservative two-tailed version of whatever statistical test that was used. Where this was not the case, and the less conservative one-tailed test would have made the difference between significance and non-significance, both results are indicated within the relevant table.

CITATION STYLE

Slight variations on the widely used American Psychological Association (APA) style of citation are employed throughout this book. The key features that deviate from the APA style are as follows:

To help reduce confusing citations to specific references, seemingly common last names for a citation's lead author is preceded with the author's initials (without periods or spaces between them). Thus, an article by *Smith* would be preceded with his/her initials, such as *AW Smith*.

To keep citations as brief as possible, an article, chapter, or book with three or more authors was simply referred to by the first author's last name (plus initials, if the name was common) and the notation *et al.* followed by the year of publication. No commas are used to separate authors and the year their work was published, although, in many instances, a page number is cited following the year of publication in order to assist readers wishing to verify a particular finding, especially in the case of lengthy publications.

SPECIAL NOTATIONS AND QUALIFIERS

Few arbitrary symbols and notations are used anywhere in this book. The most common special notation employed in the tables is an asterisk (*). This symbol signifies that a particular study is cited more than once within that particular table. The two main reasons for multiple citations to a study within a table are these: First, one study may have investigated how a variable relates to two or more specific categories of crime. Second, a study might report results for two or more different countries. For each country, the nature of the relationship with the variable in question will be indicated following the asterisk.

Also appearing frequently after table citations are what are called *qualifiers*. A qualifier is a word or phrase that serves to delimit the nature of the sample or the specific type of offense focused on in a particular study. For example, if the subjects of a study were all of one racial or ethnic group, this would be indicated in parenthesis as a qualifier. Many other qualifiers appear after particular citations to provide information about the type of methodology used to obtain the data, such as indicating that a particular study of sex offenses were limited to just one type (e.g., child molestation).

Some studies were found to be based on data extending far back in time. Therefore, to give some time-dimension to the studies reviewed besides those associated with the year of publication a special notation is made following any study that was based on data collected prior to the 20th Century. Thus, if *19th Century* appears as a qualifier following a particular study, data for that study were obtained sometime in the 1800s.

Acknowledgements

Persons who provided valuable assistance in organizing the tables and in assembling the references for this book are as follows: Derek Boyko, Elizabeth Deserly, Ryan Eberhardt, and Ashley Everson. Dr. Harry Hoffman assisted in locating references cited in this book, and Myrna Nelson assisted greatly in editing.

Special gratitude is extended to Dr. Eugene Garfield of the Institute for Scientific Information for providing access to *Current Contents*. This publication was invaluable for keeping abreast of the research reports that formed the foundation for the present book.

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Pervasiveness and Intra-Offending Relationships

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The initial chapter of the book is devoted to exploring the pervasiveness of criminality and the relationships between various types of criminality. In other words, how extensive is criminal (and delinquent) behavior throughout the world? And, to what extent is one type of offending associated with another type.

1.1 PERVASIVENESS

Research pertaining to the prevalence of various categories of crime for different geographical locations and periods of

time is summarized in the tables in this section of Chapter 1. Prevalence estimates are obtained by dividing the number of crimes in a given geographical area by the number of human inhabitants in that area. For comparison purposes, the results of these calculations are nearly always expressed in terms of the number of crimes per 100,000 inhabitants.

1.1.1 Prevalence Estimates for Homicide

The earliest known estimates for the prevalence of homicide (murder) extend back into some medieval European cities. Nationwide estimates for Europe, however, did not begin to appear until several centuries later. The findings from these historic studies are summarized in Table 1.1.1 along with estimates from more contemporary times.

Examination of Table 1.1.1 reveals that overall there has been a dramatic downturn in homicide rates from earlier centuries. This table also contains estimates of “virtual murder” in several preliterate societies. *Virtual murders* are murders in all respects except that they occur where no written laws exist. Estimates are derived from anthropological interviews of members of foraging or tribal populations about the circumstances surrounding the deaths of their friends and relatives. It should be noted that often only a few hundred persons are interviewed which typically yields results surrounding the death of no more than a few thousand persons. Such a limited number of deaths reported do not provide stable estimates because official murder rates are usually expressed in terms of rates per 100,000. Nevertheless, this research has provided an interesting (but cloudy) window into the prevalence of deaths due to violence in preliterate societies.

Comparisons across vastly different cultures should be tempered with the realization that modern emergency medical services have dramatically lowered the likelihood of death from wounds suffered in many assaults. One estimate was that the current homicide rate would be as much as five times higher if today’s emergency medical services were the same as those provided as recently as half a century ago (A Harris et al. 2002).

TABLE 1.1.1 Annual Prevalence Estimates of Homicide (per 100,000 Population).

Prevalence estimates per 100,000	Tribe	Geographic units of analyses	
		City	Country
250+	OCEANIA <i>Philippines</i> : Headland 1986:542 (Agta, foragers – 326)		
150–250	SOUTH AMERICA <i>Columbia</i> : Melancon 1982:33 (Yanomamo, horticulture – 166)	EUROPE <i>Italy</i> : MB Becker 1976:288 (in Florence in 1460 – 168)	
100–149		EUROPE <i>England</i> : Gurr 1981:313 (in Oxford in 1340 – 110)	
70–99		SOUTH AMERICA <i>Columbia</i> : Griswold 2005 (in Medellin in 2004 – 71)	EUROPE <i>Italy</i> : Bonger 1936:113 (in 1881 – 71)
40–69		EUROPE <i>England</i> : Hanawalt 1979 (in London in the 1500s – ~44); <i>Sweden</i> : Osterberg 1992:77 (in Stockholm in 1460 – 52)	EUROPE <i>Hungary</i> : Bonger 1936:113 (in 1875 – 52); <i>Spain</i> : Bonger 1936:113 (in 1885 – 68)
20–39		EUROPE <i>England</i> : Gurr 1981:313 (in London in 1234 – 25, in 1340 – 35); <i>Germany</i> : Schussler 1992 (in Nuremberg in the 1300 – 20–38) NORTH AMERICA <i>United States</i> : Gurr 1981:325 (in Chicago in 1970 – 26)	EUROPE <i>Sweden</i> : Osterberg 1996:44 (in 1550 – 33)
10–19	AFRICA <i>South Africa</i> : Thomson 1980:101 (Xhosa, horticulture – 19.3); <i>Uganda</i> : Bolton 1984:2 (Sebei, simple herders – 11.6); Southall 1960:228 (several tribes, subsistence farmers – ~6)	EUROPE <i>Germany</i> : EA Johnson 1982:361 (in Berlin in 1915 – 19); <i>Netherlands</i> : Spierenburg 1994:707 (in Amsterdam in 1655 – 11) NORTH AMERICA <i>United States</i> : Bohannon 1967:218 (in Miami, FL in 1948 – 11); Gurr 1981:325 (in Chicago in 1960 – 10)	EUROPE <i>Sweden</i> : EA Johnson & Monkkone 1996:9 (in 1830 – 13); Osterberg 1996:44 (in 1824 – 10)
5–9	AFRICA <i>Uganda</i> : Southall 1960:228 (several tribes, subsistence farmers – ~6)	EUROPE <i>Germany</i> : Schussler 1992 (in Nuremberg in 1984 – 5) NORTH AMERICA <i>United States</i> : Gurr 1981:325 (in Chicago in 1940 – 8; Gurr 1981:325; in Boston in 1880 – 7, in 1990 – 6)	ASIA <i>Soviet Union</i> : Gondolf & Shestakov 1997:68 EUROPE <i>Ireland</i> : Bonger 1936:113 (in 1885 – 9); <i>Sweden</i> : Osterberg 1996:44 (in 1760 – 32)
2–4	AFRICA <i>South Africa</i> : Bohannon 1960:158 (Bantu, subsistence farming – 4.6); Fallers & Fallers 1960:71 (Basoga, subsistence farming – 4.0); Lee 1979:398 (!Kung, foragers – 29.3)	ASIA <i>China</i> : Gaylor & Lang 1997:54 (in Hong Kong from 1955 1992 – 2–4) EUROPE <i>England</i> : Gurr 1981:313 (in London in 1900 – 3, in 1970 – 4); <i>Germany</i> : EA Johnson 1982:361 (in Berlin in 1860 – 2); <i>Netherlands</i> : Spierenburg 1994:707 (in Amsterdam in 1800 – 4) NORTH AMERICA <i>United States</i> : Gurr 1981:325 (in Boston in 1852 – 3)	EUROPE <i>Germany</i> : EA Johnson 1982:361 (from 1875 – 1886 – 2); <i>Netherlands</i> : Bonger 1936:113 (in 1880 – 4); EA Johnson & Monkkone 1996:9 (in 1899 – 4)
0–1			

1.1.2 Percentage Estimates for Frequently Occurring Types of Offenses

In statistical terms, murder is an extremely rare crime. For this reason, as noted in the preceding table, its occurrence is usually expressed in annual terms of per 100,000 population. Table 1.1.2 pertains to much more common types of offenses. Specifically, the percentage estimates (i.e., “per 100”) of the following are summarized in this table: (a) recidivism, (b) overall self-reported offending, and (c) the self-reported use of illegal drugs.

Recidivism pertains to the commission of an additional offense after having committed an earlier offense (which is usually inferred based on a prior conviction). As one can see, the estimates of recidivism rates range from 30 to 90%, depending on the length of time following release from custody to whether or not parole revocations are included as part of the recidivism measure.

The studies of overall self-reported offending are derived from surveys in which subjects voluntarily report (usually anonymously) the number of illegal acts they recall having committed. Unless specified otherwise, these acts include both victimful crimes (such as assaults, thefts, and vandalism) and victimless offenses (such as drug use and curfew or truancy violations). Table 1.1.2 suggests that approximately 90% of people recall having committed at least one delinquent or criminal act by the time they have reached their 20s.

At least in recent decades, the single most frequently reported type of self-reported offense is drug-related (mainly the possession and use of prohibited drugs, especially marijuana). Table 1.1.2 shows that the percentage estimates of illegal drug use varies considerably from one country to another, and also vary considerably within countries and within subpopulations over time.

1.1.3 Percentage Estimates for Antisocial Behavior and Chronic Physical Aggression

In Table 1.1.3 one finds a summary of studies that were located in which empirical estimates were provided regarding the prevalence of antisocial behavior. As one can see, all estimates are under 10%, and they are usually closer to 2–5%. This is true for both childhood and early adolescent forms (known as childhood conduct disorders) and for the forms that emerge in late adolescence or adulthood (called antisocial behavior or psychopathy). Chronic physical aggression, on the other hand, has been estimated to be more common than antisocial behavior, although still under 10%.

1.1.4 Criminal Versatility

According to one study of female prisoners, those who were diagnosed as psychopathic were more likely than those who were nonpsychopathic to have committed a wide range of offenses (Table 1.1.4). A review of the literature of offenders

generally reached the same conclusion regarding a link between psychopathy and crime versatility (Hemphill et al. 1998).

1.1.5 Sequences in Criminal Offending

A few studies of self-reported offending have examined the following question: Do drug offenses usually precede or follow involvement in other types of crime? As shown in Table 1.1.5, the pertinent studies have concluded that drug offenses usually follow the commission of other (usually victimful) types of offenses.

1.1.6 Trends in Delinquent/Criminal Offending

One study was located regarding trends in victimful offending. As shown in Table 1.1.6, this study concluded that in the United States, the rates of violent and property crimes decreased substantially between 1994 and 2003.

1.2 INTRA-OFFENDING RELATIONSHIPS

Numerous studies have been undertaken to determine whether or not the commission of one type of crime is associated with the commission of one or more other types. Results of these studies, along with research correlating involvement in crime with the diagnosis of an antisocial personality condition, are presented below.

1.2.1 Officially Detected Violent Crime and Self-Reported Offending or Antisocial Behavior

A few studies have investigated the connection between officially detected involvement in violent crime and either self-reported illegal drug use or a diagnosis of antisocial personality or behavior. As shown in Table 1.2.1, these studies have concluded that these phenomena are all positively correlated with one another.

1.2.2 Officially Detected Drug Crimes and Delinquency in General

As shown in Table 1.2.2, one study conducted in two countries found that persons arrested for marijuana possession are more likely than persons in general to also be arrested for delinquency.

1.2.3 Officially Detected Delinquency and Criminal or Antisocial Behavior

According to numerous studies of official delinquency, such behavior is positively correlated with a statistically

TABLE 1.1.2 Prevalence Estimates for Frequently Occurring Types of Offenses.

Prevalence estimates	Officially detected offenses	Self-reported offenses	
	Recidivism	Overall offenses	Drug offenses
90–100%			
80–89%	NORTH AMERICA <i>United States</i> : Langan & Levin 2002* (juveniles, rearrested within three years)	EUROPE <i>Sweden</i> : Nilsson et al. 2005* (87% <i>adol</i>)	
70–79%			
60–69%			NORTH AMERICA <i>United States</i> : EW Patterson 1988 (61% marijuana use, college students); Cuomo et al. 1994 (64% marijuana use, college students)
50–59%	NORTH AMERICA <i>United States</i> : Langan & Levin 2002* (juveniles, rearrested & reconvicted within three years); Langan & Levin 2002* (adults, reimprisoned within three years, released in 1994)	NORTH AMERICA <i>United States</i> : Kraut 1976 (shoplifting, college students); Klemke 1982 (shoplifting)	EUROPE <i>England</i> : Ashton & Kamali 1995 (50% marijuana use, medical/nursing students) NORTH AMERICA <i>United States</i> : penergast 1994 (59% marijuana use, college students); Mangweth et al. 1997:456 (59% marijuana use, college students)
40–49%			NORTH AMERICA <i>United States</i> : Mathias 1999:58 (40–50% for all illegal drug use, high school seniors 1975–1987)
30–39%	NORTH AMERICA <i>United States</i> : Langan & Levin 2002* (juveniles, rearrested & returned to prison, within three years)	EUROPE <i>Sweden</i> : Nilsson et al. 2005* (37% <i>adol</i> , self-reported arrest)	EUROPE <i>Austria</i> : Mangweth et al. 1997:466 (37% marijuana use, college students); <i>Spain</i> : Lopez et al. 1989 (31% marijuana use, college students); Del Rio et al. 1994 (30% marijuana use, college students); Casanovas et al. 1996 (30% marijuana use, college students) NORTH AMERICA <i>United States</i> : Mathias 1999:58 (30–40% for all illegal drug use, high school seniors 1988–1991 & 1994–1997)
20–29%			EUROPE <i>Spain</i> : Hinojal et al. 1983 (25% marijuana use, college students); Queipo et al. 1988 (25% marijuana use, college students); Soler et al. 1992 (24% marijuana use, college students); Herreros et al. 1997 (24% marijuana use, college students) NORTH AMERICA <i>United States</i> : Mathias 1999:58 (27% for all illegal drug use, high school seniors 1992)
10–19%			EUROPE <i>Spain</i> : Rubio et al. 1984 (17% marijuana use, medical students)
0–9%			

TABLE 1.1.3 Prevalence Estimates for Antisocial Behavior and Chronic Physical Aggression.

Nature of the relationship	Antisocial behavior		Chronic physical aggression
	Childhood & early adol.	Late adol. & adulthood	
0–10%	NORTH AMERICA <i>United States:</i> Lahey et al. 1999 (3.2%)	NORTH AMERICA <i>United States:</i> LN Robins et al. 1991 (3–5%); Reiger et al. 1993 (2–3%); Moran 1999 (2–3%); Goodwin & Hamilton 2003 (3–5%); W Compton et al. 2005 (3–5%)	NORTH AMERICA <i>Canada:</i> Brame et al. 2001 (5–10%)
11–20%			
21–30%			
31–40%			
41–50%			
51–60%			
61–70%			
71–80%			
81–90%			
91–100%			

significant degree with adulthood criminality and with self-reported offending. Also, persons who have been diagnosed with antisocial personality disorder are more likely to be officially identified as delinquent than are their unidentified peers (Table 1.2.3).

TABLE 1.1.4 Criminal Versatility and antisocial behavior or factors frequently linked to Criminality.

Nature of the relationship	Antisocial behavior
	Late adol. & adult
Positive	NORTH AMERICA <i>United States:</i> Salekin et al. 1997 (female prisoners, psychopaths)
Not signif.	
Negative	

TABLE 1.1.5 Sequences in Criminal Offending and Criminality/Delinquent Behavior.

Nature of the relationship	Self-reported offenses
	Overall offenses
Drug offending first	
Not signif.	
Non-drug offending first	NORTH AMERICA <i>United States:</i> Elliott et al. 1988 (victimful delinquency); Apospori et al. 1995 (victimful delinquency); Bui et al. 2000:297 (victimful delinquency)

TABLE 1.1.6 Trends in Delinquent/Criminal Offending and Criminality/Delinquent Behavior.

Nature of the relationship	Officially detected offenses
	General or adult crime
General increase	
Not signif. or irregular	
General decrease	NORTH AMERICA <i>United States:</i> HN Snyder 2005 (47%, violent & property crimes, between 1994 and 2003)

TABLE 1.2.1 Officially Detected Violent Crimes and Self-Reported Offending or Antisocial Behavior.

Nature of the relationship	Self-reported offenses	Antisocial behavior
	Illegal drugs	Late adol. & adult
Positive	EUROPE <i>Denmark:</i> Brennan et al. 2000 NORTH AMERICA <i>United States:</i> Steadman et al. 1998 OCEANIA <i>Australia:</i> C Wallace et al. 2004	EUROPE <i>Finland:</i> Eronen et al. 1996 (homicide) NORTH AMERICA <i>Canada:</i> Cote & Hodgins 1992 (homicide, male prisoners)
Not signif.		
Negative		