



# The evolutionary neuroandrogenic theory of criminal behavior expanded



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## ABSTRACT

Evolutionary neuroandrogenic (ENA) theory contends that males are more involved in crime than females due to an evolved female preference for mates who are (or at least appear to be) stable resource provisioners. To accommodate this female preference, the theory states that males have evolved genetic tendencies to produce a high level of testosterone and other androgens that enhance their competitiveness, often to the point of victimizing others. Adolescent expressions of competitive/victimizing behavior are often *crude*, thus frequently manifesting themselves in the form of behavior that others seek to suppress. By full adulthood, most individuals with highly androgenized brains will have transitioned from crude forms to *refined* forms of competitive/victimizing behavior, typically as part of their normal occupational and financial activities. The theory asserts that learning ability as well as opportunities to learn forms of competition that minimally victimize others, determine how fast individuals transition from crude to refined forms of competitiveness. In the present article, ENA theory is elaborated upon and used to explain three phenomena not previously addressed by the theory: (a) the rise of the criminal justice system, (b) the criminalization of victimless offenses, and (c) gang activities and terrorism. According to the theory, all of these phenomena have similar evolutionary and neurohormonal underpinnings.

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[O]nly through understanding the interactions among evolutionary predispositions, hormonal influences, and social/situational factors can we possibly make sense of the patterns of human aggression that we see around us.

[McAndrew, 2009, p. 330]

## 1. Introduction

Most criminologists remain convinced that biology is of little relevance to their discipline (Cooper, Walsh, & Ellis, 2010). Nevertheless, in recent years, numerous social and behavioral scientists (criminologists included) have offered proposals to the contrary (DeLisi & Piquero, 2011; Fishbein, 2006; Roach & Pease, 2013; Rocque, Welsh, & Raine, 2012; Walsh & Beaver, 2009; Walsh & Ellis, 2003; Wright & Boisvert, 2009; Wright, Tibbetts, & Daigle, 2008). For example, many have suggested that criminal (including delinquent) behavior has been naturally selected (Barber, 2009; Benson, 2012; Boutwell, Barnes, Deaton, & Beaver, 2013; Campbell, 1999; Campbell, Murcer, & Bibel, 2001; Daly, 2014; Duntley & Shackelford, 2008; Figueredo, Gladden, & Hohman, 2011; Kanazawa & Still, 2000; MacDonald, 1997; Quinsey, 2002; Rowe, Vazsonyi, & Figueredo, 1997; Ward & Durrant, 2011;

Wiebe, 2012; Yao, Långström, Temrin, & Walum, 2014). In addition to explaining criminality overall, Darwinian explanations have also been offered for numerous specific *types* of offenses, including the following:

- a. *Homicide and assault* (Beaver, Nedelec, Schwartz, & Connolly, 2014; Buss, 2006; Daly & Wilson, 1988, 1990; Duntley & Buss, 2011; Gottschalk & Ellis, 2009; Kenrick, 2011; Wilson & Daly, 1993)
- b. *Sexual assault and rape* (Apostolou, 2013; Camilleri & Stiver, 2014; Ellis, 1991; Felson & Cundiff, 2012, 2014; Jones, 1999; McKibbin, Shackelford, Goetz, & Starratt, 2008; Perilloux, Duntley, & Buss, 2012; Quinsey & Lalumière, 1995; Thornhill & Palmer, 2001; Vandermassen, 2011)
- c. *Child abuse and neglect* (Daly & Wilson, 1985; Handwerker, 2001; Hrdy & Hausfater, 1984; Temrin, Nordlund, Rying, & Tullberg, 2011; Wilson & Daly, 1987)
- d. *Spousal abuse and assault* (Belknap, 2014; Buss & Duntley, 2011; Peters, Shackelford, & Buss, 2002; Wilson & Daly, 1996, 1998)
- e. *Terrorism and genocide* (Friend & Thayer, 2012; Ghiglieri, 2000; Thayer & Hudson, 2010)
- f. *Prostitution* (Shutt, Barnes, Beaver, Higgins, & Tewksbury, 2011).

### 1.1. Genetics and criminality

In order for natural selection to operate on any behavioral trait, genes must be influencing the trait (Nei, 1975; Pinker, 2003). In other words, natural selection can only operate on traits if variations in

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those traits are genetically influenced to a substantial degree. Is there evidence that genes influence criminal behavior? Both twin and adoption studies have provided an affirmative answer (Barnes & Boutwell, 2012; Brennan & Mednick, 1993; Lowenstein, 2004; Moffitt, 2005; Rhee & Waldman, 2002; Rowe, 1986).

Furthermore, a number of traits associated with increased probabilities of criminality have been shown to be substantially heritable. These “precursor traits” include childhood attention deficit hyperactivity disorders (ADHD) and learning disabilities (Brier, 1989; Bryan, Pearl, & Herzog, 1989; Ellis, Beaver, & Wright, 2009, pp. 157–167; Keilitz, Zaremba, & Broder, 1979). Many twin studies have shown that precursor traits are also genetically influenced (Gillis, Gilger, Pennington, & DeFries, 1992; Lesch et al., 2008; Plomin & Kovas, 2005; Silberg et al., 1996).

Furthermore, studies have found criminality to be statistically linked to life-time personality traits such as high degrees of competitiveness, sensation seeking, and risk taking (Dabbs & Morris, 1990; Ellis et al., 2009, pp. 117–128; Feeley, 2006). These traits also have been shown to be substantially heritable (Blonigen, Carlson, Hicks, Krueger, & Iacono, 2008; Loehlin, Horn, & Willerman, 1981; Miles et al., 2001).

### 1.2. A snapshot scenario on how criminality could evolve

The evidence that genes contribute to criminality and related traits lays a foundation for the assertion that criminal behavior could be part of a set of naturally selected traits. To illustrate this view in the simplest way possible would be to argue as follows: *In order for genes affecting criminality to be naturally selected, individuals who carry one or more of these genes would have to pass their genes on at fairly high rates, at least under some environmental conditions.*

To illustrate the above premise, imagine that there are two societies in which crime occurs and that criminal propensities are somehow genetically influenced: Society A and Society B. Assume that these two societies are identical except for one thing: Society A is considerably less proficient at detecting crimes and incarcerating offenders than Society B. Because of this difference, individuals living in Society A with genes conducive to criminality will be more likely to remain at large and thereby pass their genes on to subsequent generations than their counterparts in Society B. In evolutionary terms, one would say that criminality is being naturally selected more in Society A than in Society B.

More will be said about how societal responses to criminal behavior can influence the prevalence of such behavior later in this article. For now, the simple hypothetical example above illustrates how members of a society (often through the functioning of a criminal justice system) can play a role in altering the prevalence of criminality in ways that would have long term evolutionary consequences.

## 2. A specific evolutionary theory of criminality

As already documented, numerous theoretical proposals have been offered for explaining criminality in Darwinian terms in recent years. However, the broadest ranging theory in this regard is the *evolutionary neuroandrogenic (ENA) theory* offered by Ellis (2003, 2004, 2005). This theory not only purports to explain most forms of criminal and delinquent offenses but even extends into traits of a noncriminal nature (Ellis, 2006, 2011; Ellis & Ratnasingam, 2012). According to ENA theory, whenever pan-cultural gender differences exist in behavior are the result of *both* evolutionary and neuroandrogenic factors. In other words, average gender differences in all behavioral traits that exist across cultures can be explained in evolved neurohormonal terms. Criminality happens to be one such trait for which universal sex differences have been well documented (Ellis et al., 2009, pp. 11–18).

In this article, an updated description of ENA theory is provided, followed by a review of the most recent evidence bearing on the theory with regard to criminality. Then, the theory is extended to cover three additional criminological topics. These are (a) the emergence and

development of the criminal justice system, (b) the criminalization of so-called *victimless* (or *consensual*) offenses, and (c) group-involved criminality such as gang and terrorist activities.

ENA theory has two essential components: (1) an evolutionary component and (2) a neurohormonal component. The first component focuses on *why* criminality exists; while the second component seeks to explain *how* such behavior has actually come to be. While these two components are ultimately interlinked, each is explained separately below.

### 2.1. The evolutionary component

Central to ENA theory is the concept of *competition* and *victimization*. The theory asserts that competition over resources and mating opportunities exists along a *continuum of civility*. At one end of the continuum are forms of competition that virtually no one finds offensive. Examples include everyday business exchanges of goods and services (such as at markets where buyers and sellers are free to either agree upon a price for a given commodity or service or to look for other options).

At the opposite end of the continuum of civility are forms of resource competition in which victimization is an obvious element. Examples would include individuals being robbed or assaulted in order to obtain resources. Nearly everyone considers these forms of competition to be morally and legally unacceptable. As a consequence, such acts are legally criminalized in all societies where writing is common.

There is a vast middle ground separating entirely acceptable competition for resources and mates and obviously victimization is involved. This middle ground usually includes varying degrees of nondisclosure regarding the true value of a commodity or service as well as the real degree to which a potential buyer wants or needs the commodity or service. As one moves further and further toward the victimizing end of the continuum, nondisclosure often takes the form of overt deception (such as selling a defective product or renegeing on a service agreement) and ultimately resorting to the use of physical force.

Of course, people disagree about exactly where tolerable forms of competition leave off and actual victimizing forms begin. Ultimately, the distinctions must be made legislatively and then interpreted by a judiciary in order to enforce laws against victimizing forms of criminality.

#### 2.1.1. Left-wing/right-wing differences

ENA theory asserts that individuals with egalitarian-oriented left-wing political leanings will be more inclined to consider almost any form of deception in the context of competition as being criminal. Individuals with freedom-oriented right-wing attitudes, on the other hand, should be more likely to regard only acts involving force, overt thefts, and other obvious forms of victimization as rising to the level of criminality.

These varying political perspectives are assumed to have genetic origins, although learning through encouragement and repetition is likely to also help to maintain people's varying perspectives. Evidence for genetic contributions to political attitudes have come from numerous twin studies (Alford, Funk, & Hibbing, 2005; Bouchard et al., 2001; Fowler, Baker, & Dawes, 2008; Hatemi, Medland, Morley, Heath, & Martin, 2007; Hatemi et al., 2010; Smith, Oxley, Hibbing, Alford, & Hibbing, 2011).

Of course, genetic influences on traits such as attitudes must operate through one or more neurological processes, some of which appear to have been recently identified (Kanai, Feilden, Firth, & Rees, 2011; Schreiber et al., 2013). Because political attitudes are associated with involvement in crime (Ellis et al., 2009, pp. 144–145), ENA theory implies that communalities exist between the neurology of political persuasions and the neurology of criminality. Such reasoning reinforces the idea that attitudinal factors may affect how people conceptualize *criminality*.

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