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The emerging science of evolutionary criminology

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1. Introduction

Ellis (this special edition) has advanced a comprehensive theoretical and empirical account of the possible cause(s) of ethnic differences in criminal behavior. In this response, we 1) assess the contribution of Ellis' evolutionary neuroandrogenic (ENA) theory to explaining ethnic differences in criminal behavior; 2) highlight two traits related to life-history and ENA theory that are becoming increasingly important in the United States: self-control and general intelligence; 3) document the interplay between individual differences in self-control and general intelligence and cultural and economic changes (specifically, we investigate how self-control and general intelligence are becoming more important to success in modern technologically based societies); and 4) we illustrate how these trends are likely to continue and possibly accelerate. Therefore, understanding these trends has important implications for both scholars and policy makers. Specifically, understanding secular changes in criminal behavior requires possessing a basic outline of social changes that have occurred over the last fifty years and how these changes have intersected with human psychology.

2. Lee Ellis' ENA theory

Ellis (2003, 2005, 2011) originally proposed ENA theory to account for sex and age variation in criminal behavior. The theory was later extended to account for universal gender differences in cognition and behavior (Ellis, 2011). In the target article, Ellis further extends ENA theory to account for ethnic differences in criminal behavior. The gist of ENA theory is that evolutionary pressures lead males and females to engage, on average, in different behaviors to maximize inclusive fitness (Buss, 1989). These sex-related differences selected for relatively more competitive males who are generally more concerned with dominance and status than females (Geary, 2010). The main proximate mechanism driving phenotypic and behavioral differences between males and females is differential exposure to androgens, with testosterone hypothesized to be a particularly important androgen.

Previous research by Ellis and colleagues has demonstrated the parsimony and usefulness of ENA theory in accounting for criminal behavior and sex differences more broadly (Ellis, 2011; Ellis et al., 2015). However, in this target article, Ellis demonstrates the potential

power of ENA theory to account for well-known ethnic group differences in criminal behavior. Ellis demonstrates specifically that androgen exposure is associated with criminality and that, with a few exceptions, androgen exposure generally varies ethnically in ways that match criminal behavior (higher levels of androgen exposure equate to a greater propensity for criminal behavior). Ellis, much to his credit, has also synthesized a vast corpus of literature related to ethnicity and hormonal exposure and, admirably, has pointed out weaknesses in the empirical literature as well as cases where ENA theory seems to be contradicted.

Although we commend Ellis for the breadth of ENA theory and his ability to apply it to the controversial topic of ethnicity and crime, we do have a few criticisms of his piece before we expound our thoughts about general intelligence, self-control and social change. First, although Ellis provided clear evolutionary logic to account for sex differences in androgen exposure (e.g., building off parental investment theory), he did not supply similar evolutionary logic for differential ethnic group exposure to androgens. This is not fatal to ENA theory because it focuses on androgens which are a proximate cause of criminal behavior. However, Rushton (1985, 1988) provided a sweeping life-history theory of ethnic/racial differences in a variety of behaviors including those related to crime. Rushton's life history framework seems consistent with Ellis' ENA theory but there may be other evolutionary accounts that explain ethnic differences in criminal behavior and/or androgen exposure. Second, we believe that ENA theory is probably too parsimonious to explain fully the complexity of ethnic differences in criminality. Crime is an extremely complicated phenomenon and crime rates fluctuate dramatically historically (Pinker, 2012) and even within brief periods of time (Farrell, Tseloni, Mailley, & Tilley, 2011). It is likely that the cause(s) of ethnic differences in criminal behavior are more complicated than simple exposure to androgens. Additionally, it remains somewhat unclear whether ENA theory can account for additional qualities of criminality—such as the tendency for criminal involvement to concentrate among a small subset of the population who seem to display a range of risk factors early in life. Yet, it seems clear that ENA theory is not orthogonal to broader evolutionary theories, and may fit well under their larger umbrella.

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3. Intelligence, self-control, and individual differences

In his target article, Ellis notes that ENA theory posits two major causal factors underlying involvement in crime: exposure to androgens and learning ability. We agree that learning ability (which can reasonably be referred to as general intelligence) is extremely important for understanding criminal behavior (Beaver & Wright, 2011). However, we also believe that individual differences in self-control are important in understanding criminal behavior (Evans, Cullen, Burton, Dunaway, & Benson, 1997; Pratt & Cullen, 2000). Furthermore, learning ability, as captured by the concept of general intelligence, and self-control are two of the most important variables in understanding individual differences in a large suite of social outcomes. And, the importance of general intelligence and self-control is likely increasing in the United States (Herrnstein & Murray, 1994). Here, we briefly review what is meant by general intelligence and self-control. In the following sections, we document how changes in the economy and culture have increased the importance of self-control and general intelligence and the implications these changes have for understanding broad social outcomes including criminal behavior.

General intelligence refers to the ability to reason, to solve abstract problems, to learn quickly, to do deal with novelty, and to build a store of general knowledge (Gottfredson, 1998). Interestingly, Charles Spearman (1904) discovered that all tests of mental ability seem to tap into the same latent ability which he called general intelligence or the *g* factor. Thus, contrary to the views of some scholars, there does not appear to be independent intelligences on which individuals vary. Rather, if a person is good at mathematics, then he or she is likely to be good at tests of vocabulary, general knowledge, and scientific reasoning. All cognitive capabilities are correlated. (Note, this is an average. There are anomalous individuals who can perform remarkable cognitive feats in one domain, but are clearly below average in others (see Ritchie, 2016). Because everyday life for educated people in post-industrial societies is extremely complex (think of the mental requirements of higher education, financial planning, and navigating modern technology), it is not too far off the mark to compare everyday life to an intelligence test of sorts (Gordon, 1997; Gottfredson, 1997). Just as an intelligent test presents takers with cognitive puzzles, so too does everyday life confront modern humans with intellectual problems (how much to save; where to live; how to climb the status hierarchy; how to invest; what car to buy; et cetera).

We now have many high-quality studies that demonstrate convincingly that general intelligence influences everything from criminal behavior to educational attainment and occupational performance (Beaver et al., 2013; Schmidt & Hunter, 1998; Strenze, 2007). Overall, people with higher IQs complete more years of schooling, have higher status jobs, make more income, perform better at work, and are less prone to social problems including criminal behavior, divorce, and drug use (Herrnstein & Murray, 1994).

Although self-control has not been studied to the degree that general intelligence has, there are many high-quality studies that demonstrate the importance of self-control in daily life (de Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012; Mischel, 2015). Self-control is a broad construct that encompasses a diverse array of traits such as ability to persist in tasks, attention span, impulse control, and frustration tolerance (Moffitt, Poulton, & Caspi, 2013). Broadly speaking, self-control refers to the exertion of effort to control the self that is self-generated (Muraven & Baumeister, 2000). For example, imagine feeling extreme hunger and having a plate of hot food sat down in front of you. Your first instinct would probably be to begin eating right away. However, suppose you looked around and noticed that nobody else was eating. In this case, you would likely exert control over your impulse to eat the food because you would view it in your long-term interest to be viewed favorably by others. Self-control is especially important for subordinating short-term goals to less salient long-term goals (e.g., drink tonight with my friends and get immediate benefit or

study for an exam where the benefits are abstract and delayed).

There is now overwhelming evidence that self-control is important in everything from school and occupational settings to eating and weight-related behaviors and interpersonal functioning. Overall, those who are better able to exert self-control are more likely to graduate from college and live successfully than are those who are less able to exert self-control. A particularly powerful demonstration of the importance of self-control comes from the Dunedin Multidisciplinary Health and Development Study, which has tracked 1037 individuals who were born in New Zealand in 1972–1973 (Moffitt et al., 2011). Researchers measured self-control among children across the ages of 3–11 years and assessed a variety of outcomes when the children reached age 32. Among other findings, self-control predicted socio-economic status and income, physical health, and criminal convictions (Moffitt et al., 2011).

As we will argue, it is likely that both self-control and general intelligence are more important now than they were fifty years ago. It is also important, and interesting, to note that general intelligence and self-control appear positively associated with each other (Meldrum, Petkovsek, Boutwell, & Young, 2017; Petvosek & Boutwell, 2014). Thus, individuals who are highly intelligent are also more likely to possess relatively higher levels of self-control than those who are less intelligent. This finding is important because together self-control and general intelligence may be the two most important predictors of success in modern societies. That they covary means that the same individuals who are gaining advantages from their ability to solve complex problems of reasoning also are likely to possess the disposition to pursue long-term goals that require deliberate practice such as learning software coding, advanced mathematics, and multiple languages (Ericsson, Krampe, & Tesch-Römer, 1993).

4. Changes to the American economy and culture

American society has undergone tremendous changes in the last 50 years (Murray, 2013). While, it would take many volumes to document these changes with any degree of detail, we can point to a few salient trends that are relevant to our contention (and the contention of authors before us; Murray, 2013) that self-control and general intelligence are becoming more important as predictors of success. We believe that two of the most important trends are 1) economically, the transformation from a manufacturing to a knowledge-based economy and 2) culturally, the rise of individualism and concerns about autonomy.

Economically, the story of the last fifty years has been the dramatic change from a manufacturing based economy to an economy driven by technology, communications, knowledge, and finance (Bell, 1976; Gordon, 2016). This transformation has led to startling changes in the labor market where unionization rates have declined dramatically and there has been a decline in high wage jobs for men who have not obtained a four-year college degree (Rosenfeld, 2014). Owing, perhaps, to declines in unionization participation as well as automation and global forces, the labor market has become increasingly polarized between high-skill jobs which pay well but require extensive education and low-skill jobs which pay poorly but do not require extensive formal education (Tüzemen & Willis, 2013; Western & Rosenfeld, 2011).

Job polarization means that many middle-skill, relatively high wage jobs that were once available, especially for men without a college degree, are gone. The decline in such jobs has occurred across the United States, but certain geographic regions such as the heavily unionized and manufacturing dependent Midwest have been particularly hard hit (Lee, 2015). Job polarization may also have contributed to overall inequality within the United States because those with college degrees enter well-paying occupations that require relatively high cognitive ability while those who do not are forced into low-paying jobs that are often temporary and insecure. One clear indicator of this change is that the earnings of college-educated workers have risen

compared to high-school educated workers for three decades (Autor, 2010). While the details of the labor market, inequality, and education are nuanced and complicated, the basic picture of rising inequality driven by demand for high skilled labor and the loss of middle-skill occupations is clearer and may have profound implications, as we will discuss below (Acemoglu, 2012).

While the economic changes that have occurred in the United States have been profound and have affected millions of people, the cultural changes over this period of time have been arguably more profound. According to Levin (2016), the latter half of the twentieth century and the opening years of the twenty-first have been marked by growing decentralization and individualism. This decentralization of institutions and culture is a result and cause of trends toward autonomy and a greater concern for individual identity rather than collective norms and mores. As Levin puts it:

“As each of us is encouraged by our culture, economy, and politics to be more like our individual selves, we are naturally inclined to recoil from any demands that we conform to the requirements of some external moral standard—a set of rules that keeps “me” from being “the real me,” “true to myself,” “living my truth.”” (p. 153)

The increase in individualism is evident in the decline in coercive cultural norms that emphasize responsibility and duty and in the decline of many mediating social institutions such as churches, labor unions, fraternal organizations, military veterans' organizations, the Boy Scouts, and Parent-Teacher Associations (Putnam, 2001). It is also evident in changing norms, values, and attitudes. For example, millennials are much less moored to institutions than are older generations. Millennials are also more inclusive and tolerant but possess relatively low degrees of trust in societal institutions (Pew Research Center, 2014). Welzel, 2014 has dubbed this set of values “emancipative values” and notes that they emphasize freedom of choice, autonomy, and equality of opportunity and therefore involve concerns for lifestyle, gender and racial equality, and distaste for coercion of all forms. Although there is currently a healthy debate about whether or not these sociocultural changes are salubrious (see e.g., Twenge & Campbell, 2010; Winegard & Winegard, 2016) it seems plausible that these changes have had the effect of making U.S. culture less coercive and more libertarian (Greenfield, 2013; Kesebir & Kesebir, 2012). When the decline of mediating institutions and collectivist cultural norms is combined with job market polarization and the increasing importance of formal education, the effects are dramatic and have implications for criminal behavior as well as for understanding broader social dynamics. It is important to note, that many of the issues we document have occurred in the midst of broad economic and social progress (Pinker, 2012; Riddley, 2011). That life is getting better for many, but is perceived as declining among certain demographics is puzzle that requires careful study. Below we briefly sketch how these changes have interacted with individual differences in self-control and general intelligence.

5. The coming apart

In last fifty years, the United States gives the appearance of becoming two separate countries: a highly functional, thriving *mostly* urban nation for those with high general intelligence and self-control and an increasingly dysfunctional, *mostly* rural nation for those with low general intelligence and self-control (Murray, 2013; Putnam, 2016). Charles Murray (2013) has called this process the “coming apart” of America and has documented the growing gap between the upper and lower classes. According to Murray, this process has occurred because the United States is extremely wealthy; brains have become more important than ever; the United States is exceptionally good at sorting cognitive talent; and individuals from one social class are likely to marry others from the same social class. We believe this is a roughly accurate portrait but we will add a few components to Murray's picture

based on what we have discussed above.

As we discussed previously, there has been labor market polarization in the U.S. such that middle-skill jobs are disappearing and what remains are either well paid high-skilled jobs that require many years of formal education or low-skilled jobs with low remuneration that require little formal education. Further, many of the mediating institutions which used to provide collective level guidance and goals have weakened or disappeared and our culture has become focused on autonomy and individualism such that there is little sanction for making decisions that place long-term goals in jeopardy (such as having a child as a teenager). Individuals who possess high general intelligence and self-control are likely to thrive in such an environment. They are intrinsically motivated to use their brains and have the discipline required to navigate the complex environment of college and the increasing complexity of everyday life. Such individuals enjoy the new cultural freedom and make prudent use of the libertarian milieu.

On other hand, those who possess relatively low general intelligence and self-control find themselves at an increasing disadvantage. Not only is higher-level schooling more difficult for such individuals, but there is less structure to guide them to maximize their long-term interest. The lack of mediating institutions and cultural guidance makes it much easier to behave relatively hedonistically without facing moral opprobrium. It is also makes it much easier to behave in ways that are immediately satisfying but ultimately injurious (e.g., smoking, having unprotected sex).

This set of social changes alone would be enough to place a significant strain on society, but they are compounded by geographical mobility. The highly educated generally wish to live in urban environments that provide high-quality amenities surrounded by other highly educated individuals who are smart and possess a high degree of self-control. These individuals have the money and resources to move into thriving cities such as New York, San Francisco, Chicago, Charlotte, etc. (Jokela, 2014). As more intelligent and self-controlled individuals flee struggling rural areas a process of adverse selection occurs. The only individuals who stay behind are either old and have strong ties to their communities or do not have the capacity (intelligence, self-control, ambition) to leave (Williamson, 2014).

This sorting process leads to an increasingly out-of-touch, hyper-educated elite and an increasingly socially dysfunctional lower class. The cocooned elite live comfortably and are so far removed from the problems and dysfunction of the lower class that they are hardly aware of its slow degeneration. In *Coming Apart*, Murray (2013) documented evidence of this by demonstrating that many social problems increased among those without a college education in the last sixty years. For example, divorce rates (among white respondents in the NLSY data) have increased dramatically among the uneducated but have hardly changed among the educated. Similarly, the number of prime aged males who are not in the labor force has increased by a factor of three among those without a college education but has not increased at all among those with a college degree (Murray, 2013).

Perhaps more tellingly, the number of adults who smoke has become almost completely predictable based upon educational attainment: only 5.4% of adults with a graduate degree smoke while 43% of adults with a GED smoke (this while the overall smoking rate has plummeted from 42.4% in 1965 to 16.8% in 2014) (Dennis, 2015). As disturbing as these trends are, it is even more alarming that the mortality rates among whites without college a college education has increased in the last 20 years (Case & Deaton, 2015). Simply put: whatever the cause, America seems to be bifurcating along educational lines.

We believe that Murray is partially correct that part of this process is simply a result of the more efficient sorting of those with high cognitive ability and the increasing importance of brains. But, we also think the evidence suggests that cultural changes have made everyday life more difficult for those who do not possess high general intelligence or self-control. Imagine an individual with an average IQ and average self-control in 2017. He finds high school difficult but not impossible. He

finds the prospect of going to college fairly daunting and distant. He knows a few people who went to college, but they dropped out or moved away. His community does not have a strong collective norm about attending college or about getting a job and being productive. This individual may end up making myopic decisions not because he lacks talent, but because the lack of mediating institutions and collective norms about education and duty makes such decisions less costly (see Murray, 2013 for similar examples).

While the picture we have painted is interesting in its own right, it has implications for thinking about criminal behavior and social policy. Generally, crime is going to be more and more concentrated geographically in areas that possess individuals with low general intelligence and self-control. Further, because the new elite generally live in thriving areas with highly functional populations, they are less likely to understand the nature of criminal behavior in areas of the country that are struggling leading to poor policy recommendations and unrealistic theories about crime (such as that it is mostly caused by poverty). Before concluding, we'll briefly touch on a few issues where the existence of a growing divide between the educated elite and the rest of society arguably leads to problematic policy recommendations.

6. The concerns of the elite

Because the educated elite view autonomy as an unalloyed good, they generally view police officers as necessary evils, but they also may underestimate the degree to which police play an indispensable role especially in areas that possess many individuals with relatively low general intelligence and self-control. As an example, consider the so-called Ferguson effect which occurred after the fatal shooting of Michael Brown on August 9, 2014 in Ferguson, Missouri (Halpern, 2015). According to Mac Donald, the Ferguson effect is an increase in crime that has occurred in some major cities as a result of police backing off of proactive policing and an increasing distrust between citizens and officers (Mac Donald, 2016). The overwhelming response to Mac Donald's proposal among the educated elite has been negative.

While the existence of a Ferguson effect is debated and much more research will need to be conducted before the truth is known, it is not an unreasonable hypothesis and it does cohere with some facts. First, homicide rates did spike in many big cities between 2014 and 2015, including a 90.5% jump in Cleveland, a 58.5% spike in Baltimore, and a 15% increase in Baltimore all cities had major police clashes (Ehrenfreund & Lu, 2017). Second, police officers have reported that they have become less willing to stop and ask people questions who seem suspicious and that they are more concerned about their safety (Morin, Parker, Stepler, & Mercer, 2017). And third, there is a plausible link between a sense of alienation, distrust, and a lack of legitimacy and violent crime (Roth, 2012). While these facts do not prove that there was a Ferguson effect, they do lend the hypothesis some plausibility, with important qualifications (Pyrooz, Decker, Wolfe, & Shjarback, 2016; Rosenfeld, 2016). The fact that the Ferguson effect is held in contempt by many educated elites suggests that their increasing isolation from "average" Americans is problematic and may promote policies that are actually deleterious to the people they are purportedly attempting to help. Even if the Ferguson effect is ultimately proved incorrect, it is problematic that the very hypothesis was ruled out of bounds by many educated elites before it has been properly empirically tested.

Another topic where there is some disconnect between the educated elite and the new lower class in the U.S. is the opioid epidemic. Most educated members of middle and upper-class society do not realize the devastation that opioids and heroin have caused in many rural areas and in many cities and towns across the United States, especially in the upper Midwest and Northeast. In 1999 the age-adjusted rate of drug overdose deaths was 6.1 per 100,000 standard population by 2015 the rate had increased more than 2.5 times to 16.3 per 100,000 (Hedegaard, Warner, & Minino, 2017). The hardest hit states (West

Virginia, New Hampshire, Kentucky, Ohio) are generally not attractive destinations for the educated elite who might therefore underestimate the devastation caused by opioid drug use (Quinones, 2016).

There are many other areas, including education, where elite opinion may be negatively affected by the coming apart of social classes in the United States. For example, among most educated elites there is a consensus that the U.S. educational system has not kept up with technological change and is thus producing cohorts of individuals who are unable to take advantage of the demand for high-skilled labor (Goldin & Katz, 2010). While there may be some truth to the notion that our educational system squanders social capital, it seems to us much more likely that the reality of individual differences in traits such as general intelligence and self-control makes it highly unlikely that altering our educational system will lead to drastically different outcomes. Rather, we have simply hit a point where many jobs are simply beyond what many Americans can reasonably do. While some may view this as a pessimistic or bleak picture, we think that it is neither. It is simply a reality, like disease and mortality, that policy makers need to come to terms with when thinking about the social world.

7. Conclusion

In his target article, Ellis laid out an ambitious and parsimonious theory of ethnic differences in criminal behavior. This theory has much to recommend it because it is elegant, simple and has had success in predicting universal sex differences (Ellis, 2011). We used Ellis' theory as a jumping off point to investigate the influence of general intelligence and self-control in society more generally. Specifically, we believe that cultural and economic changes have rewarded those who are high in general intelligence and self-control and punished those who are low on these traits. Those who have reaped benefits from economic and cultural change increasingly live in thriving urban environments where there is a relative dearth of social problems and crime while those who have not benefited from these changes increasingly live in dysfunctional communities with declining social capital, out of wedlock births, divorce, drug use, and criminal behavior. Because the educated elite most often are far removed from such areas and because their life experiences are not representative of the population at large, they may recommend and pursue suboptimal social policy. This is problematic since the educated overwhelmingly dominate the institutions that possess the power to implement policy. We predict that these social trends will increase in the future and that criminal behavior will become more spatially and educationally concentrated and our policies to combat such behavior will be increasingly out of touch with local reality.

Due to space constraints, our description of social trends has been very impressionistic bordering on overly simplistic. We note that there exist very thorough treatments of many of these social trends (e.g., Murray, 2013; Putnam, 2016), and ask that our readers be charitable in interpreting some of the more speculative passages. We are very concerned about these social trends and if this piece is used as a catalyst for scholars to conduct more rigorous, fleshed out research on these topics it will have served a good purpose.

While Ellis used his ENA theory to account for ethnic differences in criminal behavior, we have noted that life history theory, and therefore components of ENA theory, can be used to understand salient social trends across ethnic groups. It seems reasonable to suggest that the growing divide between the educated elite and the relatively uneducated is related to individual differences in self-control and general intelligence (among other variables). Yet, it remains unclear the extent to which androgens play a causal role in this process. If Ellis' ENA theory is valid, a clear prediction is that differential exposure to androgens will predict educational attainment and class membership. However the evidence shakes out, understanding criminal behavior will increasingly be an interdisciplinary endeavor relying on genetics, evolutionary theory, endocrinology, sociology, economics, and history.

Moreover, any theory of crime that seeks to truly be a universal theory of human behavior will next to intersect in meaningful ways with emergent social trends. Ellis's theory seems to show some promise of being able to accommodate and explain modern societal patterns. With more bold, synthetic papers like Ellis' target article, the future of criminology will be bright indeed.

References

- Acemoglu, D. (2012). What does human capital do? A review of Goldin and Katz's the race between education and technology. *Journal of Economic Literature*, 50, 426–463.
- Autor, D. (2010). The polarization of job opportunities in the U.S. labor market: Implications for employment and earnings. *Community Investments*, 23, 11–16.
- Beaver, K. M., Schwartz, J. A., Nedelec, J. L., Connolly, E. J., Boutwell, B. B., & Barnes, J. C. (2013). Intelligence is associated with criminal justice processing: Arrest through incarceration. *Intelligence*, 41(5), 277–288.
- Beaver, K. M., & Wright, J. P. (2011). The association between county-level IQ and county-level crime rates. *Intelligence*, 39, 22–26.
- Bell, D. (1976). *The coming of post-industrial society: A venture in social forecasting*. New York: Basic Books.
- Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences*, 12, 1–14.
- Case, A., & Deaton, A. (2015). Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *Proceedings of the National Academy of Sciences*, 112, 15078–15083.
- Dennis, B. (2015, November 12). Who still smokes in the United States—In seven simple charts. *Washington Post* at https://www.washingtonpost.com/news/to-your-health/wp/2015/11/12/smoking-among-u-s-adults-has-fallen-to-historic-lows-these-7-charts-show-who-still-lights-up-the-most/?nid&utm_term=.0e0a63152818.
- Ehrenfreund, M., & Lu, D. (2017, January 27). More people were killed last year than in 2014, and no one's sure why. *The Washington Post* at <https://www.washingtonpost.com/graphics/national/2015-homicides/>.
- Ellis, L. (2003). Genes, criminality, and the evolutionary neuroandrogenic theory. In A. Walsh, & L. Ellis (Eds.). *Biosocial criminology: Challenging environmentalism's supremacy* (pp. 13–34). New York: Nova Science Publishers.
- Ellis, L. (2005). A theory explaining biological correlates of criminality. *European Journal of Criminology*, 2, 287–315.
- Ellis, L. (2011). Evolutionary neuroandrogenic theory and universal gender differences in cognition and behavior. *Sex Roles*, 64, 707–722.
- Ellis, L., Hoskin, A., Hartley, R., Walsh, A., Widmayer, A., & Ratnasingam, M. (2015). General theory versus ENA theory: Comparing their predictive accuracy and scope. *International Journal of Offender Therapy and Comparative Criminology*, 59, 1429–1458.
- Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100, 363–406.
- Evans, T. D., Cullen, F. T., Burton, V. S., Dunaway, R. G., & Benson, M. L. (1997). The social consequences of self-control: Testing the general theory of crime. *Criminology*, 35, 475–504.
- Farrell, G., Tseloni, A., Mailley, J., & Tilley, N. (2011). The crime drop and the security hypothesis. *Journal of Research in Crime and Delinquency*, 48, 147–175.
- Geary, D. C. (2010). *Male/female: The evolution of human sex differences* (2nd ed.). Washington, DC: American Psychological Association.
- Goldin, C., & Katz, L. F. (2010). *The race between education and technology*. Cambridge, MA: Harvard University Press.
- Gordon, R. A. (1997). Everyday life as an intelligence test: Effects of intelligence and intelligence context. *Intelligence*, 24, 203–320.
- Gordon, R. J. (2016). *The rise and fall of American growth: The U.S. standard of living since the civil war*. Princeton, NJ: Princeton University Press.
- Gottfredson, L. S. (1997). Why g matters: The complexity of everyday life. *Intelligence*, 24, 79–132.
- Gottfredson, L. S. (1998). The general intelligence factor. *Scientific American*, 9, 24–29.
- Greenfield, P. M. (2013). The changing psychology of culture from 1800 through 2000. *Psychological Science*, 24, 1722–1731.
- Halpern, J. (2015, August). The cop. *The New Yorker* at <http://www.newyorker.com/magazine/2015/08/10/the-cop>.
- Hedegaard, H., Warner, M., & Minino, A. (February, 2017). Drug overdose deaths in the United States, 1999–2015. Centers for Disease Control and Prevention at <https://www.cdc.gov/nchs/data/databriefs/db273.pdf>.
- Herrnstein, R. J., & Murray, C. A. (1994). *The bell curve: Intelligence and class structure in American life*. New York: Free Press.
- Jokela, M. (2014). Flow of cognitive capital across rural and urban United States. *Intelligence*, 46, 47–53.
- Kesebir, P., & Kesebir, S. (2012). The cultural salience of moral character and virtue declined in twentieth century America. *The Journal of Positive Psychology*, 7, 471–480.
- Lee, T. (2015, June 15). The rust belt: Once might cities in decline: An auto giant's exit brings the region to its knees. MSNBC at <http://www.msnbc.com/interactives/geography-of-poverty/ne.html>.
- Levin, Y. (2016). *The fractured republic: Renewing America's social contract in the age of individualism*. New York: Basic Books.
- Mac Donald, H. (2016, July 20). The Ferguson effect. *The Washington Post* at https://www.washingtonpost.com/news/volokh-conspiracy/wp/2016/07/20/the-ferguson-effect/?utm_term=.21cc733229db.
- Meldrum, R. C., Petkovsek, M. A., Boutwell, B. B., & Young, J. T. (2017). Reassessing the relationship between general intelligence and self-control in childhood. *Intelligence*, 60, 1–9.
- Mischel, W. (2015). *The marshmallow test: Why self-control is the engine of success*. New York: Little: Brown and Company.
- Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H., ... Sears, M. R. (2011). *A gradient of childhood self-control predicts health, wealth, and public safety*. 108, Proceedings of the National Academy of Sciences 2693–2698.
- Moffitt, T. E., Poulton, R., & Caspi, A. (2013). Lifelong impact of early self-control. *American Scientist*, 101(5), 352–359.
- Morin, R., Parker, K., Stepler, R., & Mercer, A. (2017, January 11). Behind the badge. Pew Research Center at <http://www.pewsocialtrends.org/2017/01/11/behind-the-badge/>.
- Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin*, 126, 247–259.
- Murray, C. (2013). *Coming apart: The state of white America, 1960–2010*. New York: Random House.
- Petvosek, M. A., & Boutwell, B. B. (2014). Childhood intelligence and the emergence of self-control. *Criminal Justice and Behavior*, 41, 1232–1249.
- Pew Research Center (2014, March 7). Millennials in adulthood: Detached from institutions, networked with friends. Retrieved June 26 from http://www.pewsocialtrends.org/files/2014/03/2014-03-07_generations-report-version-for-web.pdf.
- Pinker, S. (2012). *The better angels of our nature: Why violence has declined*. New York: Penguin.
- Pratt, T. C., & Cullen, F. T. (2000). The empirical status of Gottfredson and Hirschi's general theory of crime: A meta-analysis. *Criminology*, 38, 931–964.
- Putnam, R. D. (2001). *Bowling alone: The collapse and revival of American community*. New York: Touchstone.
- Putnam, R. D. (2016). *Our kids: The American dream in crisis*. New York: Simon & Schuster.
- Pyrooz, D. C., Decker, S. H., Wolfe, S. E., & Shjarback, J. A. (2016). Was there a Ferguson effect on crime rates in large US cities? *Journal of Criminal Justice*, 46, 1–8.
- Quinones, S. (2016). *Dreamland: The true tale of America's opiate epidemic*. New York: Bloomsbury Press.
- de Ridder, D. T., Lensvelt-Mulders, G., Finkenauer, C., Stok, F. M., & Baumeister, R. F. (2012). Taking stock of self-control: A meta-analysis of how trait self-control relates to a wide range of behaviors. *Personality and Social Psychology Review*, 16, 76–99.
- Ridley, M. (2011). *The rational optimist: How prosperity evolves*. New York: Harper.
- Ritchie, S. (2016). *Intelligence: All that matters*. Boston, MA: Teach Yourself.
- Rosenfeld, J. (2014). *What unions no longer do*. Cambridge, MA: Harvard University Press.
- Rosenfeld, R. (June, 2016). Documenting and explaining the 2015 homicide rise: Research directions. National Institute of Justice at <https://www.ncjrs.gov/pdffiles1/nij/249895.pdf>.
- Roth, R. (2012). *American homicide*. Cambridge, MA: Harvard University Press.
- Rushton, J. P. (1985). Differential K theory: The sociobiology of individual and group differences. *Personality and Individual Differences*, 6, 441–452.
- Rushton, J. P. (1988). Race differences in behaviour: A review and evolutionary analysis. *Personality and Individual Differences*, 9, 1009–1024.
- Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, 124, 262.
- Spearman, C. (1904). "General intelligence," objectively determined and measured. *The American Journal of Psychology*, 15, 201–292.
- Strenze, T. (2007). Intelligence and socioeconomic success: A meta-analytic review of longitudinal research. *Intelligence*, 35, 401–426.
- Tüzemen, D., & Willis, J. (2013). The vanishing middle: Job polarization and workers' response to the decline in middle-skill jobs. *Economic Review-Federal Reserve Bank of Kansas City*, 5–31.
- Twenge, J. M., & Campbell, W. K. (2010). *The narcissism epidemic: Living in the age of entitlement*. New York: Atria Books.
- Welzel, C. (2014). *Freedoms rising: Human empowerment and the quest for emancipation*. New York: Cambridge University Press.
- Western, B., & Rosenfeld, J. (2011). Unions, norms, and the rise in US wage inequality. *American Sociological Review*, 76, 513–537.
- Williamson, K. D. (2014, January 9). The white ghetto. National Review at <http://www.nationalreview.com/article/367903/white-ghetto-kevin-d-williamson>.
- Winegard, B., & Winegard, B. (2016, January 5). *The kids are alright*. Quillette at <http://quillette.com/2016/01/05/the-kids-are-all-right-2/>.