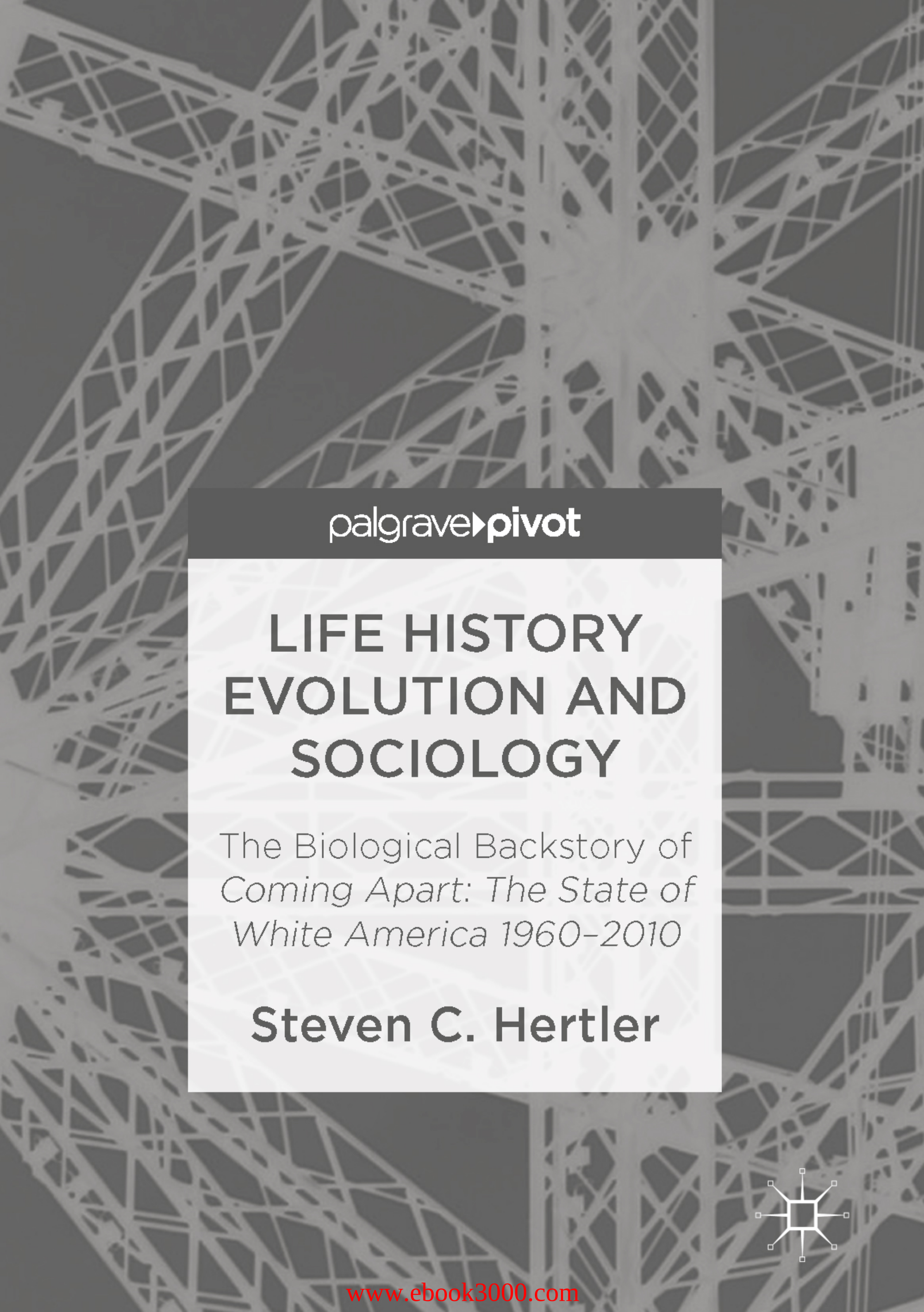

palgrave pivot

# LIFE HISTORY EVOLUTION AND SOCIOLOGY

## The Biological Backstory of *Coming Apart: The State of White America 1960–2010*

Steven C. Hertler

# Life History Evolution and Sociology

Steven C. Hertler

# Life History Evolution and Sociology

## The Biological Backstory of *Coming Apart: The State of White America 1960–2010*

palgrave
macmillan

Steven C. Hertler
Psychology
College of New Rochelle
New Rochelle, New York, USA

ISBN 978-3-319-48783-0 ISBN 978-3-319-48784-7 (eBook)
DOI 10.1007/978-3-319-48784-7

Library of Congress Control Number: 2016957386

Cover illustration: Détail de la Tour Eiffel © nemesis2207/Fotolia.co.uk

Printed on acid-free paper

This Palgrave Macmillan imprint is published by Springer Nature
The registered company is Springer International Publishing AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

*This book is dedicated jointly to Charles Murray and Aurelio J. Figueredo et al., who respectively produced the sociological and biological datasets herein joined.*

# PREFACE

Charles Murray's *Coming Apart: The State of White America 1960–2010* documents 50 years of changed college admissions, government incentives, mating and migration patterns that have wrought national divisions across indexes of marriage, industriousness, honesty, and religiosity. The present paper supplies the evolutionary and genetic framework that Murray, toward the end of his book, predicts will one day explain the revolution in American society he documents. This framework is *life history evolution*, a subdiscipline within evolutionary biology singly capable of explaining why violent crime, property crime, low marriage rates, father absence, early birth, low educational achievement, low income, poverty, lack of religiosity, and reduced achievement striving will reliably co-occur as part of a complex. This complex augments *facultatively, developmentally*, and *evolutionarily* in response to unpredictable and uncontrollable sources of mortality. The uncertain tenure of life wrought by unpredictable and uncontrollable mortality selects for a present-oriented use of bioenergetics resources recognizable as the social ills of *Fishtown*, Murray's archetypal working-class community. In turn, the 30 years of life history literature herein reviewed confirms the biological logic of elite intermarriage and sequestration. The source of life history variation, policy implications, and demography is discussed.

# CONTENTS

## CHAPTER 1

# A Fault Line Fifty Years in the Making

**Abstract** The American sociologist Charles Murray recently published *Coming Apart: The State of White America 1960–2010*, a book that documents 50 years of changed college admission standards, government incentives, mating practices, and migration patterns that have wrought national divisions across indexes of marriage, industriousness, honesty, and religiosity. Herein a relevant summary of *Coming Apart* is supplied, providing readers with a common and current understanding of the book's pertinent content. As will be seen, *Coming Apart*'s thesis is that America is cleaving into separate populations across levels of marriage, industriousness, honesty, and other virtues putatively prerequisite for a functional republic.

**Keywords** Charles Murray · Coming Apart · evolutionary psychology · cognitive elite

*Coming Apart: The State of White America 1960–2010*, written by Charles Murray and published in 2012 by the Random House subsidiary *Crown Forum*, documents the divisive stratification of American culture into lower and upper classes, respectively, represented by *Fishtown* and *Belmont*. Enveloping a small portion of Interstate 95 as it traces the Pennsylvania side of the Delaware River, the portside neighborhood of Philadelphia known as Fishtown is most extensively described by Murray on page 215. Among other sources cited by Murray are the studies of local historian Kenneth Milano (2008, 2010) who traces Fishtown's eponymous origins to an apocryphal comment by Charles Dickens, and a more established practice of shad fishing

S.C. Hertler, *Life History Evolution and Sociology*,
DOI 10.1007/978-3-319-48784-7_1

by early inhabitants of the region.[1] Whatever its history, this predominately working-class Irish Catholic section of Philadelphia now has low home values, rents that often do not exceed 800 dollars monthly, a median household income below 40,000 dollars annually, and a predominance of persons terminating their education before, or just after, finishing high school.[2] Belmont, in contrast, is a wealthy suburb of Boston bordered by Cambridge, Watertown, Lexington, and Arlington. Originally under the aegis of some of the aforementioned surrounding towns, Belmont transitioned from region to incorporated town in the latter half of the nineteenth century with the financial assistance of John Perkins Cushing, one of its most wealthy citizens. By the turn of the century, farmers and farms decline, being replaced by artists and authors, physicians, and scientists (Belmont Massachusetts 2016). Murray (2012) finds the town much the same. These same elite professionals are joined by university professors, lawyers, engineers, and a variety of business professionals, making the Baccalaureate commonplace and the median household income well more than six figures. This is a combination then of education and wealth. Rather than constituting a literal comparative study of these two towns, *Coming Apart* treats Fishtown and Belmont as exemplars of a divided America.

During the early 1960s, Fishtown and Belmont began diverging, with unprecedented bifurcation and isolation resulting by 2010. Previously, Murray argues that the United States was subject to a set of founding values, held by the elite, and shared by the masses. As the prologue stresses, choice and mobility remained limited in the 1960s, such that those on the upper and lower ends of the economic ladder did not differentiate themselves to excess, or separate themselves in residence. Americans shared their culture, listening to more or less the same music, attending similar churches, mingling, mating, and marrying one another. The elite drove cars mostly of American manufacture and lived in houses not grossly more expansive or expensive than that of your traditional working class family dwelling. Importantly, Murray does not contend that American society had been classless, he acknowledges that the rich and the poor sometimes lived and worshipped in different parts of town and observed different customs and practices. The difference between past and present is one of degree. At present, however, the degree of separation, both in terms of proximity and across "core behaviors and values," creates an unparalleled alienation fatal to cross-class perspective taking, founding American principles, and national unity (Murray 2015). Fishtown and Belmont have diverged like the sciences and humanities,[3] with Murray acting the part of C. P. Snow (1993) in documenting the separation and trying to slow it.

Foremost among the mechanisms enabling this divergence is the college sorting machine. As Murray explains, earlier cohorts at elite institutions were not as uniformly brilliant as those now in attendance. There is presently a high market value for intelligence, and, partially in response to that market pressure, elite institutions began more effectively identifying and recruiting the *cognitive elite* based on proxies for intelligence such as the GPA and SAT. So while in previous generations an extremely intelligent person may have worked the land, the demand for intelligence would draw him out, and the college sorting machine would get him to the right place. He is plucked off the farm, taken out of the small town occupied by less overwhelmingly intelligent peers, and placed among his own kind. In this way, the cognitive elite met, mingled, and mated in college, in graduate school, and in the high-end vocations that they thereafter occupied. The result was intellectual and educational *homogamy*, which refers to interbreeding among peoples with like characteristics. Formed by the college sorting machine and maintained by the insularity of affluent zip codes, elite mating pools allow greater choosiness, such that the highly educated and extremely intelligent can now easily practice homogamy. Further still, the national divide transcends intelligence and education to encompass virtues. The consequence is two Americas: one that appears to be maintaining and another that appears to be losing virtues taken by most founding fathers as requisite for a functional republic; these are (1) marriage, (2) industriousness, (3) honesty, and (4) religiosity (Murray 2012).

When Murray (2012, p. 11) says that "this book is about an evolution in American society that has taken place since November 21, 1963," he might have literally meant it. Though, in that passage he was using the term *evolution* synonymously with *change*, on page 299 of the hard cover edition,[4] in a chapter entitled "Alternative Futures," Murray predicts that:

> over the next few decades advances in evolutionary psychology are going to be conjoined with advances in genetic understanding, leading to a scientific consensus that goes something like this: There are genetic reasons, rooted in the mechanisms of human evolution, why little boys who grow up in neighborhoods without married fathers tend to reach adolescence not socialized to the norms of behavior that they will need to stay out of prison and to hold jobs. These same reasons explain why child abuse is, and always will be, concentrated among family structures in which the live-in male is not the married biological father. These same reasons explain why society's attempts to compensate for the lack of married biological fathers don't work and will never work.

The central thesis of this chapter is that the advances in evolutionary psychology and genetics that Murray looks forward to actually became available in 1985, exactly midway into the 50 years examined by *Coming Apart*.

## NOTES

1. Here, the neighborhood's Wikipedia page was also accessed for edifying information, some of which is taken up by K. Milano in more detail https://en.wikipedia.org/wiki/Fishtown,_Philadelphia
2. These specific statistics accessed at the following cite: http://www.city-data.com/neighborhood/Fishtown-Philadelphia-PA.html
3. C. P. Snow, well positioned as a physical chemist turned novelist, gave a 1959 Senate House speech in Cambridge that was subsequently published as *The Two Cultures and the Scientific Revolution*. As *Coming Apart* documents a great societal schism, *The Two Cultures* documented a great intellectual schism that had been taking place since the specialization of the sciences. As Snow's thesis wends, there were no longer general intellectuals embodying Western wisdom, but scientists that knew but a bit of Dickens and humanists that could not define the second law of thermodynamics.
4. Throughout, any page numbers cited refer to the hardback edition of the book.

CHAPTER 2

# The Biology of Bifurcation

**Abstract** At one point, Murray looks toward a future date where the sociological variables that serve as the fodder of his book will be contextualized within a biological framework. This chapter argues that *life history theory*, though it has successfully explained variation in human behavior since 1985, is the biological framework for which Murray expectantly waits. After briefly stating what life history theory is, this section moves on to outline the remainder of the book.

**Keywords** Rushton · Differential K Theory · life history evolution

The evolutionary and genetic explanatory framework that Murray feels the want of is a mid-level subdiscipline within evolutionary biology called *life history evolution*. The psychologist who would apply MacArthur and Wilson's (1967) original articulation of life history evolution to humans was John Philippe Rushton who published a landmark paper in 1985 on *Differential K Theory*, showing how life history evolution could explain differences in mating behavior, criminality, and intelligence across human populations (Figueredo et al. 2005; Rushton 1985, 1987, 1990, 1995, 2004). Though life history evolution hides behind every line of *Coming Apart*, its remains unmentioned. Nevertheless, life history theory was discussed previously by Murray. Murray, the author of *Coming Apart*, is also coauthor of *The Bell Curve* (1994) wherein Rushton is mentioned

S.C. Hertler, *Life History Evolution and Sociology*,
DOI 10.1007/978-3-319-48784-7_2

several times in the body of the work, and then discussed pointedly across two pages of Appendix Five. Along with coauthor Richard Herrnstein, Murray summarizes Rushton's life history thesis, noting how intelligence is situated within a larger complex of traits that include reproductive timing, hormone level, criminality, and marital stability, among others.[1] Writing in 1994, Herrnstein and Murray (p. 667) note that Rushton had theretofore defended his application of life history theory from vitriolic critics with "increasingly detailed and convincing empirical reports"; though they conclude, "the theory remains a long way from confirmation." In the 18 years separating the publication of *The Bell Curve* from the publication of *Coming Apart*, human life history variation has been studied intensively by Rushton and a great many other theorists, amassing a data set that presses ever closer towards consensus, if not confirmation. Though *Coming Apart* takes up some of the same topics broached by *The Bell Curve*, it does not revisit life history theory, either as it was described originally by Rushton or as extended by subsequent researchers. Additionally, since its publication, it does not appear that the biological backstory of *Coming Apart* has been but once pointedly identified and, even now, it remains unexplained.[2] Across many searches, one book review written by Bo and Benjamin Winegard (2012) was found in the journal *Evolutionary Psychology*, which reviewed *Coming Apart*, while at one point, on page 206, specifically discussing the relevance of life history evolution.[3]

The purpose of the present chapter is to tap the heretofore unrealized potential of life history evolution to explain *Coming Apart* via the following structure: Life history evolution will be generally explained as it applies to humans (Chapter 3). Thereafter, education and intelligence (Chapter 4), community and religiosity (Section 4.1), industry and honesty (Section 4.2), and marriage and parental investment (Section 4.3) will be reviewed as they relate to contemporary life history evolutionary literature and the social changes documented in *Coming Apart*. The discussion section broaches the following questions: *what drives life history variation?* (Chapter 5); *how do life histories change in persons and populations?* (Section 5.1); *how might a life history framework broadly inform policy?* (Section 5.2); *what is the rationale for homogamous mating?* (Section 5.3); *what are the implications of elite migration and isolation?* (Section 5.4). Selectively surveying relevant intellectual history, the fifth and final section of the discussion (Section 5.5) more broadly addresses the implications of biological applications and explanations of human sociological data.

## NOTES

1. A word search for *life history* within *The Bell Curve* using both Amazon and Google's searchable indexes reveals only one finding and this is on page 816 within the bibliography wherein a book chapter entitled the *Cambridge Study in Delinquent Development* was referenced within Kerner and Kaiser's (1990) *Criminality: Personality, Behavior, Life History*. On the other hand, Rushton is referred to many times. His life history theory is pointedly discussed; it is only that Herrnstein and Murray omit the label *life history*.
2. I read *Coming Apart* in June of 2015. Earlier that month, I had just submitted an article on life history evolution to the journal *Evolutionary Psychological Science* (Hertler 2015b); an article that required a sweeping survey of the life history literature to prepare. *Coming Apart* and the mass of life history literature were then conveniently juxtaposed, making the connection between the two obvious. Noticing the book was published three year earlier, I began some general and several systematic searches, recognizing that anyone familiar with both *Coming Apart* and the life history literature might have thought to explain what I have termed the book's *biological backstory*. A Google Scholar search conducted on June 17, 2015, using the terms *life history* and *coming apart*, each in separate quotations, retrieved 231 articles and books. However, many of these hits predate the publication of *Coming Apart* in 2012. When limiting the search parameters to articles and books written between the years 2012 and 2015, only 48 results were procured. Many dealt with life history evolution, but, like Charlene Donahue's publication in the *Maine Entomologist*, used the term *Coming Apart* to refer to something tangible, such as a metal cage. More commonly, publications, like that of Rymarz and Belmonte (2014) did use the phrase *coming apart* in reference to the book by that title written by Charles Murray, but they used the term *life history* in reference to one's historical life narrative, as used in psychoanalytic and historical literatures, and exemplified in Runyan's (1984) *Life Histories and Psychobiography: Explorations in Theory and Method*. Of the 48 potentially relevant retrievals, there was only one that was actually relevant. This was Salter's (2012) article in *Quadrant* entitled *War against Human Nature in the Social Sciences*, which mentions life history strategy in mice and fish and also mentions Murray's book, but not perhaps pointedly relating the two, and without making it the subject of the article. A custom search of book reviews through Google on the same date yielded more than 1,900 reviews with the quoted words *coming apart*, but only one result when *life history* is separately quoted; and this being a review of an unrelated book.

3. The Winegards were the first, and possibly the only ones, to make this connection. With the exception of Murray, they were apparently the only ones that were familiar with *Coming Apart* and life history evolution. Their identification of the connection, but also its lack of explanation and exploration, can be seen in the quotation below:

> Before concluding, we would like to forward a brief and evolutionarily plausible explanation for the problems Murray documents. Humans are cultural animals and invest heavily in cognitive and symbolic capital (Baumeister 2005; Hill and Hurtado 1996/2011). From a life-history perspective, such investments entail a number of trade-offs. If a particular culture does not offer an obvious path to long-term status and success, the people in it will choose shorter investment strategies. The new lower class has largely lost the opportunity to procure a decent paying factory job. Such jobs, at one time, conferred healthy amounts of status and unions provided important social capital, allowing an uneducated worker to live a comfortable and respectable life (Shipler 2005). Without these jobs, an important avenue of status is removed from society, and those who would have occupied them are forced to take low status jobs; jobs that provoke the scorn of most who can avoid them. Furthermore, these low status jobs do not offer mobility. A thirtysomething Wal-Mart cashier cannot reasonably expect that his hard work will be rewarded with consistent raises and promotions, terminating, perhaps, in a solid management job. Thus the new lower class is deprived of opportunities for engaging in long-term (or even medium-term) cultural strategies. Understandably, then, they turn their attention to short-term strategies, competing for immediate rewards and ephemeral boosts in status and self-esteem. Concurrently, those who can invest in long-term strategies battle each other for dominance of the cultural narrative (because this confers status), and their concerns become further removed from those of the average American.

## CHAPTER 3

# Life History Evolution: An Explanatory Framework

**Abstract** The purpose of this chapter is to supply the reader with foundational information about life history theory without which the remainder of the book would not make sense. Herein, it is explained that life history was originally an exclusively biological theory relevant to the timing of gestation, development, maturation, and death. Later, it was used to explain variation among human populations not only on these core biological variables, but also on psychological and social variables. Psychological variables include personality traits like conscientiousness, mating strategy, and intelligence, while sociological variables include altruistic effort, cultural capital, and communal affiliation. With this primer on life history evolution, the reader can better assimilate specific life history knowledge detailed in subsequent sections.

**Keywords** Somatic effort · reproductive effort · *r*-selected · *K*-selected · pace of life

Mark the difference in maturation, fecundity, and longevity between annual and perennial plants (Barrett et al. 1997), bats and terrestrial rodents (van Schaik and Isler 2012; Wilkinson and South 2002), and small and large undulates (Harvey et al. 1989), and questions will arise only answerable within a life history evolutionary framework (Hertler 2016). Life history is a mid-level evolutionary biological subdiscipline (Figueredo et al. 2005) that explains values across seven intercorrelated variables: (1) size at birth;

S.C. Hertler, *Life History Evolution and Sociology*,
DOI 10.1007/978-3-319-48784-7_3

(2) growth pattern; (3) age and size at maturity; (4) number, size, and sex ratio of offspring; (5) age- and size-specific reproductive investments; (6) age- and size-specific mortality schedules; (7) length of life (Stearns 1992; Braendle et al. 2011; Hertler 2016). Variation across these life history traits creates a continuum that is variously labeled *fast* and *slow*, or *r* and *K*,[1] which, in aggregate, measures an organism's pace of life; that is, the pace at which an organism lives out its life cycle (Réale et al. 2010; Johnson et al. 2012; Niemelä et al. 2013). As a group, insects are fast or *r* strategists in that they are small at birth, grow rapidly, mature while still young and small, have relatively more small offspring to which they provide scant parental investment, senesce rapidly, and die early (Geary 2003). Alternatively, elephants are slow or *K* strategists in that they are large at birth, grow slowly, become mature and fertile only after many years of delay, have few and large offspring to which they provide consistent parental investment, senesce slowly, and die late (Stearns 1983). Life history evolution measures the balance of bioenergetics resources (Figueredo et al. 2013) allocated toward maintaining the organism, defined as *somatic effort*, or replacing the organism, defined as *reproductive effort* (Williams 1966; Hewlett et al. 2000; Figueredo et al. 2005). This is consistent with the *Disposable Soma Hypothesis*,[2] which properly identifies the organism as a temporary vessel in which genes reside for a time (Kirkwood and Holliday 1979; Kirkwood and Austad 2000). Following this, the more disposable the soma, the more *r* selected the species. Fast life history strategists invest little in bodily growth and maintenance, funneling resources instead to reproducing themselves early and amply (Kaplan and Gangestad 2005). Alternatively, the slow life history strategist, in effect, holds onto the genetic, intergenerational baton longer, and thereafter passes it on to only a few long-developing, high-quality offspring (Hertler 2016).

As reviewed previously (Hertler 2016), all species fall at some point along the life history continuum; but there are species-specific life history parameters, as opposed to fixed values (Figueredo et al. 2005). Humans, taken as a species, are highly *K* selected (MacDonald 1997; Ellis 1987, 1988), but some are more so than others (Figueredo et al. 2005). This human life history variation was first described by Rushton (1985) in a paper entitled *Differential K Theory: The Sociobiology of Individual and Group Differences*. In the 30 years since the initial articulation of Rushton's Differential *K* Theory, a host of research and theoretical developments have documented the physiological, behavioral, social, and cultural ways in which human life history variation is expressed

(Weizmann et al. 1990; Chisholm 1999; Figueredo et al. 2005; Gladden et al. 2008; Walker and Hamilton 2008; Griskevicius et al. 2011; Sherman et al. 2013; Wenner et al. 2013). All such variation will be familiar to the readers of *Coming Apart*.

## NOTES

1. As previously described (Hertler 2016), "the *r* used above refers to rate, which, along with *K* for carrying capacity, was part of the shorthand notations used by the innovators of life history theory, MacArthur and Wilson. Though the density dependence that these notations were used to calculate has been superseded by direct measures of mortality, their use above follows the modern convention of using *r* and *K* as shorthand references to fast and slow life histories respectively."
2. Disposable Soma Theory Encapsulated

   The concept of a disposable soma can be disconcerting, given that the organism, whether animal or person, author or reader, is simply a temporary vehicle for the propagation of genetic material. Such a view undermines the view of *self*, especially as it has been exalted since the Renaissance, as an ultimate end. Putting aside the many existential and philosophical implications of somas being disposable, it is important to provide some further explanation of this important concept. Such a theory would hardly be conceivable without the work of Richard Dawkins and W. D. Hamilton. Dawkins achieved a conceptual revolution in Darwinian evolution by discussing the gene, instead of the organism, as the level of selection. This more precisely emphasized that the evolutionary process is simply a change in gene frequencies. Hamilton showed the soma to be disposable through a similar emphasis on genes by developing his theory of *inclusive fitness*, otherwise known as *kin selection*. By either name, this process recognizes relatives as repositories of shared genes. The higher the level of genomic overlap, the more the interests of self and other overlap. It is in this way that self-sacrifice is more likely for a daughter than a niece; for a niece than a cousin; for a cousin than a stranger. Genetic propagation, not individual survival, is paramount; a process that is illustrated by the male Australian Redback Spider which increases offspring viability or number by becoming a nuptial meal for his mating partner.

## CHAPTER 4

# Aggregating the Biological, Psychological, and Sociological

**Abstract** Readers come to the fourth section prepared by prerequisite knowledge, both concerning Murray's findings and life history theory. Serving as the central chapter, a subsection is devoted to each major variable studied by Murray: (1) education and intelligence; (2) community and religiosity; (3) industry and honesty; (4) marriage and parental investment. Each of these four sections open with a review of Murray's data, which is followed by relevant biological explanations culled from the life history literature. The fifth and final section then emphasizes the unity among all the variables studied in the first four sections; unity only comprehensible within a life history framework.

**Keywords** Executive function · intelligence · education · future orientation · Embodied capital · altruism · social capita · Conscientiousness · virtue · industriousness · Marriage · parental effort · reproductive effort Meta-theory · inter-correlation · time-relevant investment

*Coming Apart* documents the formation and sequestration of a new cognitive elite. Intelligence begets education, and jointly they engender isolation. This has always been the case. Intelligence at once seems to confer an interest in, and capacity for, education. These putatively genetic associations are then strengthened by cultural norms of learning and education within intelligent families.[1] Nevertheless, the increased strength

S.C. Hertler, *Life History Evolution and Sociology*,
DOI 10.1007/978-3-319-48784-7_4

of these correlations nearly renders them different in kind. Within the 50 years under scrutiny, the market pressure for intelligence and the efficiency of the college sorting machine accentuated long-standing association between intelligence and education, so that intelligence more reliably brought education. With these forces in full effect for half a century, it would be difficult to argue with Murray's assessment (2012, p. 61): "The children of the well-educated and affluent get most of the top scores because they constitute most of the smartest kids. They are smart in large part because their parents are smart." Intelligence and education therefore jointly form the fault line across which contemporary America is dividing.

This stance is consistent with a life history perspective. To understand this, consider first how emblematic human intelligence is of the slow life history (Kaplan et al. 2000; Wenner et al. 2013). The human brain is rare in its abilities, yes; but also in its liabilities. Rapid action potentials enabling neurotransmission require biochemical disequilibria maintained by sodium-ion pumps, pumps which use masses of glucose and oxygen (Laughlin et al. 1998). When compared to other primate species, excesses of gynoid fat on the hips, and in the breasts, have been evolutionarily selected to the end of supporting brain growth in utero and during nursing (Thornhill and Gangestad 2008). The brain is grossly disproportionate to the newborn body, shows significant postnatal growth (Bogin and Smith 2012), and then only full maturity in the twenties (Gogtay et al. 2004). Thus, the human brain is hard to grow and costly to maintain. Our investment in such a costly organ with such a distant future payoff marks humans as a highly *K* selected species (Wenner et al. 2013). The human brain is like the efficient factory, in that it requires excessive startup costs with a commensurate, but long deferred, payoff. One should recognize the future-oriented nature of such a developmental course; it presupposes a long life and the opportunity to reap what was long ago sown. This lengthened timescale is the essence of the *K*-selected life history.

Nonetheless, within the human species, there remains some variation in both brain size and the cognitive ability it brings (Galton 1869; Evans et al. 2005; Witelson et al. 2006; Pol et al. 2006; Deary et al. 2010); and this variation was discussed in the context of life history evolution by Rushton (Rushton and Ankney 1996). It was Rushton's (2004) contention that variation in intelligence can only be fully understood within a life history evolutionary framework because of its relationship with "brain size, longevity, maturation speed, and several other life-history traits." These assertions rest on his analysis of 234 mammalian species wherein “brain weight, longevity, gestation time, birth weight, litter size [negatively], age at first mating, duration of lactation, body weight, and body length” were all highly intercorrelated, as would be predicted by a life history perspective. Later research among humans pointedly confirmed this, showing that criminality, early sexual behavior, divorce, illegitimate birth, and promiscuity all correlate negatively with intelligence (Griskevicius et al. 2011; Wenner et al. 2013). The slow life history is especially relevant to the form of intelligence “captured under the category label Executive Functions” (Wenner et al. 2013; Rushton et al. 2008). Executive functioning is a particularly human form of intelligence enabled by enlarged frontal lobes, which allow planning, delay of gratification, goal setting, and inhibition (Suchy 2009); all of which are in some sense future oriented and enable one to work toward future ends (Goldstein and Naglieri 2013). Consequently, items from the *Self-Control Schedule*, the *Self-Control Questionnaire*, and the *Barrett Impulsivity Scale* are used to capture variation among human life histories (Figueredo et al. 2006).

As encephalization is a biological investment in the future, education is a cultural investment in the future. Having made the first investment, as Murray points out, one is better able and more willing to make the second. In the life history literature, education, like the accumulation of skill and knowledge generally, is taken as a human marker of the slow life history in that it is an investment in embodied capital (Brumbach et al. 2009; Griskevicius et al. 2011). Education becomes comprehensible as a sort of culturally relevant somatic investment. Situating it within the life history framework, education is positively correlated with delayed reproduction and delayed gratification (Griskevicius et al. 2011) and negatively correlated with addiction, HIV infection, violence, crime, and infant mortality (Chisholm 1999). In conclusion, the life history perspective concurs with Murray’s pairing of intelligence and education, while also pairing intelligence and education with the remaining variables studied in life history evolution. The cognitive elite of *Coming Apart* should then be understood more broadly to represent the *K* selected elite.

## 4.1 COMMUNITY AND RELIGIOSITY

*Coming Apart* makes much of community, surveying the bonds that comprise it, and the social norms that maintain it. Communities that function, which are good places to live and rear children, are those that have religious members, parent-teacher association participation, and civic fund drives; they are places with some degree of giving and volunteering, investment, and concern. All such activities create social capital. Religion is repeatedly treated because it is a major source of social capital. Volunteers and benevolent foundations, youth groups and local societies, interest clubs, and political organizations, all very often have religious affiliations and are maintained by religious persons. These sources of social capital remain Belmont staples. Alternatively, the simultaneous deterioration of secular and religious participation, and the reductions in social capital that follow from it, renders Fishtown communities unfit vehicles for the socialization of children (Murray 2012).

The *social capital* of which Murray speaks has several parallels within the life history literature. First, there is reference to *embodied capital*, a term denoting investment in skill development and knowledge acquisition (Griskevicius et al. 2011). Embodied capital makes the *K* selected more able organizers and contributors (Kaplan et al. 2003), and thus more effective vectors of social capital. Second, and more directly, the highly *K* selected also show elevations in altruism (Figueredo et al. 2004, 2005), suggesting that the blessings of embodied capital will be benevolently disseminated, rather than selfishly enjoyed (Del Giudice and Belsky 2011). More than showing nepotistic favor to kin as expected by the dictates of *inclusive fitness* (Hamilton 1964), elevated altruism among the highly *K* selected predict "long-term cooperative relationships" with non-kin (Figueredo et al. 2013), characteristic of *reciprocal altruism*[2] (Trivers 1971). Altruism is a logical corollary of the slow life history because reciprocal altruism, altruism directed at non-kin, provides delayed and diffuse fitness gains which can only reward on average in the kinds of stable societies that slow life history strategists reside in and construct. Altruists gain reputation and status only through iterative interactions, and only within regulated societies (Kaplan et al. 2007). Additionally, there is a correlation between religiosity and slow life history (Rushton 1985; Figueredo et al. 2006, 2007). The elevated religiosity displayed by the *K* strategist is more broadly symptomatic of elevations in "moral rule following" (Gladden et al. 2009). Thus, founding religious institutions, and participating in religious services, is but one expression of the *K* selected disposition to "formalize social and moral rules" (Gladden et al. 2009). For a summary statement of social capital, one must only look to the *K Factor*, an amalgamated life history variable which measures the following dispositions toward generating social capital: (1) support and altruism toward non-kin; (2) close relationship quality; (3) communitarian beliefs; and (4) religiosity (Figueredo et al. 2007).

The *K* selected do not just passively exhibit altruism, morality, and religiosity, they seek and create altruistic, moral, and religious communities. They solve collective action problems and provide the institutional superstructure in which the *r* selected can participate. The *K* selected then actively coerce participation within that superstructure. The life history literature is very clear on this point. The *K* selected not only "formulate and promulgate social norms," they are "overrepresented among the rule-enforcers." Gladden et al. (2009) make this point very explicitly, writing that the *K* selected act the part of "altruistic punishers," incurring the cost of punishment to facilitate social cohesiveness. They "punish or deter free-riders that violated social rules aimed at facilitating collective cooperation" (Gladden et al. 2009). As Gladden et al. (2009) state, "slow LH individuals would require more social stability and social order than fast LH individuals for their strategy to be optimal." Sherman et al. similarly note that, at once, the *K* selected "rise higher in the social hierarchy" conferring the ability to enforce social norms, and "are more socially concerned and socially engaged," conferring the motivation to enforce social norms (Sherman et al. 2013). The same pattern holds for religious norms (Figueredo et al. 2006, 2007); the *K* selected "are both more likely to exhibit religious behavior and more likely to follow and enforce" related norms and practices (Gladden et al. 2009). In essence, the *K* strategist is creating an environment conducive to the *K* strategy. This is just what beavers do. Beavers create the controlled aquatic environment that best suits their unique anatomy and instincts (Dawkins 2004; Odling-Smee et al. 2013). In both the beaver and the *K* strategist, there is an expression of a strategy, but also a concomitant drive to create an environment conducive to that strategy. This process of finding and constructing environments congruent with one's traits generates serious scholarly research under the following names: *Niche construction*, *genotype-specific habitat selection*, *active gene-environment correlation*, *experience producing drives* (Penke 2010, p. 257), *niche building*, and *niche seeking* (Dumont 2010, p. 134; Hertler 2015a). In each case, the drive to experience conditions conducive to one's strategy is part of the strategy itself. Thus, the application of life history evolution reframes the social capital produced by the broad elite as *niche construction*. Social capital is the *K* strategist's way of establishing the stability that enables a long-term orientation, and the cooperation that maximizes it.

## 4.2 Industry and Honesty

Murray finds *industry* to be a founding virtue; and very justifiably so, as it is conspicuous in the life of Washington (Padover 1955/1989; Fowler 2011), the letters of Jefferson (Boyd and Butterfield 1950; Cappon 1988), and the lineage of the Adamses (Bemis 1956; Nagel 1999; Brookhiser 2002; Ferling 2010). One of 13 virtues toward which Franklin struggled (Franklin 1916; Morgan 2002), industry, or *industriousness*, was preached from the pulpit (Middlekauff 1999), practiced by the people (Tocqueville 1945), and inculcated in the children (Greven 1977) within the bourgeois heritage of Puritanism (Morgan 1961; Ziff 1973; Breitwieser 1984; Howe 1988). Then there is honesty, another founding virtue; one that, as Murray shows, was stressed by *Honest John Adams* (Chinard 1990). That self-governing peoples needed to be self-restraining peoples, while quoted by Murray in a rather obscure epistolary exchange between Adams and John Jay, was no select example, but a fervent article of faith for the young and even middle-aged Adams, as it was for many founders (Smyth 1931; Shaw 1976; Thompson 1998). When he waxed pessimistic, Adams sometimes doubted the virtue of the American people, but never doubted their need to be virtuous (Adams 1992). The association between virtue and republicanism was an object of received wisdom easily traceable to, among other sources, Montesquieu (1748/2009) and his survey of modern and ancient governments. Doubt about this need for a virtuous citizenry was rare, with Federalist number ten being the most conspicuous example; an essay wherein Madison suggests that variety of factions, essentially checking one another in vice, could compensate for a want of intrinsic restraint (Hamilton et al. 2011). Still, long after federalist ten, it was thought that the citizenry of a republic, no more than the sovereign of a monarchy, could be "averse from obedience, hostile to religion and to established law" (Dalberg-Acton 1907/1993, p. 93).

Within modern personality psychology, industry and honesty are co-occurring traits subsumed within *conscientiousness*,[3] the super-trait (Dumont 2010; Hertler 2014) comprised of the following six facets: *Competence*, *Order*, *Dutifulness*, *Achievement Striving*, *Self-Discipline*, and *Deliberation* (Costa et al. 1991). Relevance to industry and honesty is seen, not only across conscientiousness's six *facets*, but across its six *factors*.[4] As previously reviewed (Hertler 2016), factor analysis of conscientiousness yields three factors related to industry, *industriousness*, *order*, and *self-control*, and three factors related to honesty, *responsibility*, *traditionalism*, and *virtue* (Roberts et al. 2005; Hagger-Johnson and Whiteman 2007). Developmentally stable (Donnellan and Robins 2009) and decidedly heritable (Bergeman et al. 1993), conscientiousness induces effort (Rothbart et al. 2009) and imparts "motivational stability within the individual, to make plans and carry them out in an organized and industrious manner" (DeYoung and Gray 2009; p. 335). Conscientiousness mediates the genetic component of job satisfaction (Ilies and Judge 2003) while also predicting high supervisor ratings (Barrick et al. 1993), job stability (Viinikainen et al. 2010), punctuality and attendance (Conte and Jacobs 2003), income (Rentfrow 2014), negative reactions to unemployment (Boyce et al. 2010), satisfaction by high income (Boyce and Wood 2011), career planning (Taber 2013), and voluntarily assumption of additional roles at work (Bowling 2010). On the other hand, self-reported measures of conscientiousness empirically predict honesty (Horn et al. 2004) and levels of independently measured integrity (Murphy and Lee 1994) while being negatively correlated with infidelity (Nowak et al. 2014), plagiarism (Siaputra 2013), tax evasion (Widiger and Lynam 1998), and antisocial behavior (Krettenauer et al. 2013).

Having established that industriousness and honesty, valued by Murray as part of the American ethos, are synonymous with conscientiousness, it now remains to review the unequivocally strong associations between conscientiousness and the $K$ selected life history. These associations are both physical and behavioral (Hertler 2016; Figueredo et al. 2006; Brumbach et al. 2009). First, conscientiousness is predictive of a slow life history strategy in that its relationship to mortality is as powerful as systolic blood pressure, as per a classic longitudinal study (McCann 2005). A meta-review by Friedman (2008) surveyed 194 studies and found that conscientiousness was inversely related to all of the following unhealthy and risky behaviors: "tobacco use, diet and activity patterns, excessive alcohol use, violence, risky sexual behavior, risky driving, suicide, and drug use." Conscientiousness promotes health behaviors (O'Connor et al. 2009; South and Krueger 2014) but is furthermore *independently* predictive of longevity (Friedman 2008) among American presidents (McCann 2005) and the people they govern (Friedman et al. 1993, 1995; Martin et al. 2007). In other words, conscientiousness temperamentally induces medication compliance, exercise, and healthful eating, while continuing to evidence correlates with longevity even when controlling for these, and a multitude of other potentially mediating variables. Conscientiousness is similarly associated with high viral suppression and slow disease progression (Roberts et al. 2009; Hill et al. 2011). In the presence of type-I diabetes it predicts delayed renal deterioration (Brickman et al. 1996) and reduced mortality (Christensen et al. 2002). It likewise predicts slow disease progression amidst HIV infection (O'Cleirigh et al. 2007) and cancer (Cardenal et al. 2012). Conscientiousness does not just slow the progression of disease, it negatively predicts disease development. As Friedman (2008) reports, conscientiousness is inversely correlated with the development of "diabetes, hypertension, sciatica, urinary problems, stroke, hernia, TB, joint problems, and a variety of mental illnesses and substance abuse problems." Consistent with previous research (Terracciano et al. 2008; Wilson et al. 2004; Weiss and Costa 2005; Martin et al. 2007), a 17-year cohort study found that "each 1 standard deviation decrease in conscientiousness was associated with a 10 % increase in all-cause mortality" (Hagger-Johnson et al. 2012). In all these ways conscientiousness serves as a proxy for *somatic effort*, a hallmark of the slow life history (Figueredo et al. 2006).

Second, conscientiousness is predictive of a slow life history strategy because it instills a future-oriented time horizon (Schechter and Francis 2010), imparting all the behaviors that follow from such an orientation (Figueredo et al. 2005; Friedman et al. 1993; DeYoung and Gray 2009). MacDonald (1997) suggests that "downward social mobility" of the kind described in *Coming Apart* is associated with low conscientiousness and the relative inability to "defer gratification, engage in sustained work," and "persevere in long term goals." On the contrary, as Figueredo et al. (2005) state, high "conscientiousness relates to the use of long-term strategies, desire for control, dependability, and behaviors that reflect those preferences." Conscientiousness confers a nonconscious temperamental assumption that hardships can be preempted; an implicit belief in personal agency and so an orientation to self-efficacy. The conscientious and the slow life history strategist alike occupy an explicable world in which caution reduces risk, effort rewards, and it is wise to invest in the future because there will be a future to face. This is contrasted with the hyperbolic discounting and present orientated *r* selected (Frederick et al. 2002). In addition to accruing resources, the conscientious slow life history strategist displays loss aversion (Figueredo et al. 2014), a form of risk taking that functions to protect hard-won resources, and risk aversion (Møller and Garamszegi 2012), an anxiety-based trait that inhibits rash bids to obtain high-risk resources (van Schaik and Isler 2012). Thus the slow life history strategist will work a *nine-to-five* for a steady paycheck, defend those earnings vigorously, but forgo the windfall for fear of the shortfall. For all these reasons, conscientiousness is incorporated into life history assessment measures (Figueredo et al. 2013) and life history conglomerate variables (Figueredo et al. 2007; Rushton et al. 2008). In sum, conscientiousness, and the industry and honesty that it subsumes, is part of a larger life history strategy (Hertler 2016).

## 4.3 Marriage and Parental Investment

Figure 8.8 on page 160 shows a shockingly steep trend line for white nonmarital births within the 50 years under study. Also among the more startling data points presented in *Coming Apart* is the numeric inversion from 84 to 48 % of prime-aged adults being married within the new lower class. With nearly one third of this subpopulation never having been married, disinvestment in marriage as a cultural institution accounts for as much of the decline as divorce. This contrasts with the new upper class whose marriage rates have hardly deviated from the general norms as measured in 1960. The result is that 22 % of Fishtown children, as compared to 3 % of Belmont children, now live in single parent homes. There are correspondingly more unattached males, many of whom are not employed and who do not channel resources to offspring. Also, high rates of teenaged pregnancies and unplanned pregnancies are reported. Murray's interest in these variables stems from their associations with childhood outcomes. In contrast with the intact family composed of a married couple and their biological children, the outcomes for alternative arrangements, such as cohabitation and single motherhood, are correlated with everything from delinquency, criminality, illness, and injury, to externalizing behaviors, mortality, scholastic problems, and sexual precocity.[5]

All such variables are of central importance to life history evolution. Consequently, *The K Factor*, a global index of life history variation, aggregates reproductively relevant variables under the *Sexual Restrictedness Factor*, which measures sexually relevant values, decisions, and norms assessing restraint, abstinence, and attitudes (Figueredo et al. 2006). Across these traits, population variation is evident. Supporting Murray's position on intact homes, the life history literature found that "youth from two-parent homes were more likely to be sexual[ly] restricted than those from one-parent homes" (Figueredo et al. 2006). As compared with the *r* selected, the *K* selected better approximate monogamous mating, forming stable pair bonds with minimal promiscuity (Figueredo et al. 2006; Olderbak and Figueredo 2010). The opposite pattern of promiscuity and marital instability cause the *r* selected to have a young age at first reproduction, making teenaged pregnancy an artifact of a fast life history (Chisholm 1999; Belsky et al. 2012). Early pregnancy, particularly in the teen years, is not only frowned upon socially, but is risky biologically. Yet, the behavior of unmarried pregnant teens will be discouraged but not understood, except from a life history perspective. As with life history as a whole, the timing of a female's first birth is based on a calculus, with every position imposing some matter of risk, as best summarized by Ellis et al. (2009):

> Trade-offs between growth and current reproduction are well-documented in research on adolescent childbearing. Adolescent mothers have a smaller pool of energetic resources to devote to production of offspring. Such mothers tend to be smaller and convert less of their weight gain during pregnancy to fetal weight gain than do adult mothers (Garn et al. 1986), experience higher rates of antenatal complications and mortality than do adult mothers, and their offspring are at increased risk of stillbirths, congenital abnormalities, prematurity, low birthweight, and retardation (Black and DeBlassie 1985; Furstenberg et al. 1989; Luster and Mittelstaedt 1993). At the same time, however, adolescent childbearing reduces the probability of death prior to first reproduction (shorter exposure to all sources of mortality), increases the total reproductive output of lineages through shorter generation times, and results in longer reproductive lifespans (Ellis 2004).

Conception and care are subject to the same calculus. Again, as compared with the *r* selected, the *K* selected have lower levels of infant mortality and higher levels of parental investment (Thornhill and Palmer 2004; Figueredo et al. 2006; Belsky et al. 2012). Long deferred conception and high paternal investment have their own risks, as Crews and Ice (2008, p. 653) state: "investing in the embodied capital or future reproduction of another organism [a son or daughter] requires an evolutionary gamble on an outcome with diminishing probabilities." In this way, the *K* selected strategy of high investment in a small number of offspring presupposes the efficacy of that investment (Figueredo et al. 2006). Parental effort, embodied capital, somatic effort, encephalization . . . they all follow the same slow life history calculus. To develop, they must yield returns on investment (Kaplan et al. 2000) which can only be expected if the lifecourse is sufficiently slowed and secured. Not incidentally then, for instance, parental care scales with intelligence across species and among humans (MacDonald 1997). The teenaged pregnancies and out of wedlock births of Fishtown are nothing but the expression of a fast life history strategy that takes any available resources and quickly converts them into offspring (Chisholm 1999; p. 217; Hertler 2016). This is *r* selected rapid baton passing.

## 4.4 Life History as a Correlated Complex

*Coming Apart* contains many passages that establish connections across all variables under scrutiny:

1. "At that time, 38 percent of white males ages 20–49 who were on probation had not completed high school, more than four and a half times the overall dropout rate" (Murray 2012, p. 192).
2. "That information reveals an extraordinarily strong relationship between the mother's education and the likelihood that she gives birth as an unmarried woman" (Murray 2012, p. 161).
3. "People who attend church regularly and report that religion is an important part of their lives have longer life expectancies, less disability in old age, and more stable marriages . . . there is strong evidence for the relationship of religiosity to happiness and satisfaction with life, self-esteem, less depression, and less substance abuse . . . the list goes on" (Murray 2012, p. 201).
4. "No matter what the outcome being examined—the quality of the mother-infant relationship, externalizing behavior in childhood (aggression, delinquency, and hyperactivity), delinquency in adolescence, criminality as adults, illness and injury in childhood, early mortality, sexual decision making in adolescence, school problems and dropping out, emotional health, or any other measure of how well or poorly children do in life—the family structure that produces the best outcomes for children, on average, are two biological parents who remain married" (Murray 2012, p. 158).

From a life history perspective, this is not at all surprising. Life history evolution is the only meta-theory elegantly explaining these many intercorrelations. Recall, life history evolution aggregates seven factors, which form an interdependent complex. It is as if these seven factors were links on a chain. Any one link can be elevated or depressed only slightly before elevating or depressing the chain as a whole. Figueredo et al. (2006) most pointedly explain this interdependence across these many variables from a life history perspective in a passage that merits extended quotation:

> The social and behavioral literature indicates that many behavioral traits commonly considered "social problems" in modern industrial society occur in such clusters. A number of independent literatures consistently describe a positive manifold of correlations among many common human behavioral traits considered "social problems." Theories derived from the Standard Social Science Model do not fully account for this positive manifold or cluster of "social problems," but Life History Theory does because it instead construes such clusters to be coordinated arrays of contingently adaptive life-history traits. The literature examining teen pregnancy describes an entire cluster of what are considered "social problems" in modern industrial society. Teen pregnancy is predictive of both welfare dependence and the intergenerational transmission of poverty (Bonell, 2004; Gueorguieva et al., 2001; Smith, 2000; Spencer, 2001). Also, simply belonging to a group identified as high-risk sexually active teens (defined as teens who have had sexual intercourse six or more times in the past six months and rarely or never used birth control) predicts low socioeconomic status, sexual intercourse before the age of 15, non-use of birth control, and having multiple sexual partners (Kivisto, 2001). These same behaviors occur concurrently with poor school performance, alcohol and illicit substance use, and having friends in gangs (Kivisto, 2001). Reports from males indicating a history of impregnating others, multiple sexual partners, presence of an STD, drug abuse, and unreliable condom use indicate strong positive correlations among these variables. (Guagliardo et al. 1999)

In short, life history perspective suggests that the outcomes of Fishtown are a complex. Because life history confers an underlying biology of *time relevant investment*, violent crime, property crime, low marriage rates, father absence, early birth, low educational achievement, low income, poverty, outsized use of government services, lack of religiosity, and reduced achievement striving will reliably co-occur.

## NOTES

1. Diagnostic testing confirms this relationship, finding intelligence and academic achievement to be intercorrelated within persons, so much so that weak intelligence-achievement correlations contribute toward the diagnosis of specific learning disorders.

2. The two forms of altruism discussed represent major additions to modern Darwinian Theory in that they explain the existence of altruism, which, from an evolutionary perspective, might at first seem paradoxical. W. D. Hamilton developed the concept of inclusive fitness, an instance of kin selection, showing that promoting the fitness of one's relatives indirectly raises the proportions of one's own genes within the population (Hamilton 1964; Campbell 1972; Williams 2008). Robert R. Trivers developed the concept of reciprocal altruism, explaining the fitness benefits derived from mutual aid where help at one time is repaid in kind at another (Trivers 1971, 2005).
3. Conscientiousness, along with Openness, Extraversion, Neuroticism, and Agreeableness, is part of the five factor model of personality derived from the factor analysis of adjectives used to describe human personality.
4. Each of the five factor traits described in the previous note are routinely divided into six facets by theory and on assessments of personality such as the NEO-PI-R and the NEO-FFI. Facets are very similar to factors in that their goal is to divide a larger construct into its component parts. Nevertheless, the factors discussed in the body of the text are derived from factor analysis derived from factor analytic studies.
5. Murray quotes James Wilson, who in turn quotes Cicero, on the foundational importance of marriage to all the higher-order social institutions that rest upon it. Tocqueville is further quoted, to demonstrate the propensity of early American women to defer marital bonds and to contract marriage with informed decision and selective discrimination. The freedom of choice exercised by women, which Tocqueville describes and admires as the *superiority* of American women, is nothing other than *female choice*, one of two forms of sexual selection driving male behavior. Studies of sexual selection and life history evolution suggest that ecology drives female choice, which in turn drives male evolution, with resultant effects on the mean life history of a population.

CHAPTER 5

# Questions of Etiology, Change, Policy, Mating, and Migration

**Abstract** With the close of the fourth section, it is anticipated that readers will know what life history theory is, and how it explains Murray's data. Having demonstrated that *Coming Apart* is fundamentally a work of life history, it is necessary to reconsider its implications. Therefore, Chapter 5 goes on to consider what the sources of change are, parsing between nature and nurture and other questions of causality. Thereafter, chapter five considers how the biological underpinnings of these sociological patterns change policy approaches and add gravity to data on mating and migration.

**Keywords** Extrinsic mortality · intrinsic mortality · bet-hedging · Malthusian · Environmental heterogeneity · space · time · structure · Genetically · developmentally · facultatively · violent crime · Assortative mating · homogamy · super-zips · genetic similarity · Bubble · niche construction · niche selection · migration

## 5.1 What Drives Life History Variation?

Mortality, specifically its predictability and controllability, is what drives the life history of a species (Charnov 1993; Hewlett et al. 2000). *Extrinsic mortality* is that which can neither be predicted nor controlled; *intrinsic mortality* can be both predicted and controlled (Griskevicius et al. 2011). High rates of extrinsic mortality promote faster life histories

S.C. Hertler, *Life History Evolution and Sociology*,
DOI 10.1007/978-3-319-48784-7_5

(Chisholm 1999). Extrinsic mortality induces faster intergenerational baton passing, selecting for disposable somas, large broods, and little parental investment (Promislow and Harvey 1990). Risk of lineage extinction is thereby diversified. Alternatively, a relative exchange of extrinsic for intrinsic mortality promotes a *K*-selected life history, with its slower intergenerational baton passing, selection for durable somas, small broods, and high parental investment (Quinlan 2007). Investing in the maintenance of oneself, and the care of offspring, only rewards to the extent that it works. To clarify the relationship between mortality and life history, consider an analogy: An investor with little knowledge of stock trends (extrinsic mortality) invests little across many stocks, which functions as a bet-hedging device in the absence of predictive power (fast life history). Alternatively, a seasoned trader with inside information (intrinsic mortality) invests much in a few stocks, which are known to have a high likelihood of return (slow life history). The predictability and controllability of the investment, like the predictability and controllability of mortality, determines the strategy that is adopted.

When experimentally amplifying rates of extrinsic mortality, senescence specifically, and life history speed generally, augments in fruit flies, guppies, and bacteria (Rauser et al. 2009). Briefly, fruit flies, in a series of experiments by Stephen Stearns, have assumed greatly exaggerated lifespans as extrinsic mortality is dialed down. In these, and in similar experiments (Rose 1984; Partridge and Fowler 1992; Zwan et al. 1995; Burke and Rose 2009), artificially controlled mortality regimes were responsible for this remarkable divergence (Stearns et al. 1998, 2000). Conversely, experimentally augmented extrinsic mortality rates within a naturalistic setting increased guppy fecundity and maturation speed, while experimentally augmented extrinsic mortality rates within the laboratory setting "allowed for the invasion of a more rapidly aging morph"[1] (Rauser et al. 2009, p. 565; Walsh and Reznick 2011). Ackermann et al. (2007), experimentally manipulating "asymmetrically fissile bacteria,[2] found rapid aging in response to high extrinsic mortality (Rauser et al. 2009). Related experiments, manipulating mortality regime or its correlates, have shown experimental associations between mortality and life history speed (Dowling 2012) across species of beetle (Maklakov et al. 2007), nematode (Chen and Maklakov 2012), birds (Alonso-Alvarez et al. 2006), and flies (Martin and Hosken 2003). Moving from experimentation to observation, those organisms possessing extrinsic mortality reducing adaptations show slower life histories: Quahog clams (Bodnar 2009; Philipp and Abele 2009), tortoises and turtles (Gibbons 1987), elephants (Wiese and Willis 2004), arboreal primates (van Schaik and Isler 2012), bats (Wilkinson and South 2002; van Schaik and Isler 2012), and birds, specifically parrots and cockatoos (Young et al. 2012). In common, all of these animals have some means of limiting extrinsic mortality, be it by shell, bulk, tree, or wing. With these adaptations providing effective predator defense, life becomes less precarious, and life histories can slow. Beyond experimental manipulation and evolved adaptations, climate can greatly alter the mortality regime. To this end, consider that geographically mapped selections of long-lived organisms (Sussman et al. 2014) show a disproportionate number concentrated in desert, polar, and subalpine biomes wherein extrinsic mortality imposed by biotic competition is limited by the harshness imparted by high altitude, latitude, or aridity: Creosote and Yucca of the Mojave Desert (Sussman et al. 2014; Bellingham and Sparrow 2000), the many succulent species within the Grand Canyon of Arizona (Bowers et al. 1995), cave salamanders (Speakman and Selman 2011), Siberian actinobacteria (Sussman et al. 2014), and the great majority of Antarctic plant species (Green et al. 2007).

Thus, experimental manipulations, cross-species comparisons, and geographic surveys establish as causal, the degree of predictability and controllability of mortality. Humans are not exempt from this calculus. Life history variation results. Consider the comparison of 170 nations conducted by Low et al. (2008) who found that nearly three quarters of the variation in age at first birth related to life expectancy in the predicted direction. Consider too, the study of Chicago neighborhoods by Wilson and Daly (1997), wherein variation in life expectancy related to a nearly five year differential in age at first birth, again in the predicted direction (Griskevicius et al. 2011). Again, this is because humans are subject to the same inescapable calculus. As described by Gladden et al. (2009), expressing the future orientation of the *K* selected, and all the biological and cultural behaviors that follow from it, would be incongruous and maladaptive under conditions of high extrinsic mortality. As these authors state, “planning for the future or delaying reproduction,” “would likely be wasted in an unpredictable environment where mortality risk is high.” The relative inability to protect offspring against extrinsic mortality results in the *r* selected bet-hedging against lineage extinction via reproducing early and often (Chisholm 1999). The rapidity of the *r* selected life is not an expression of pathology. A person or party may value the *K* strategy over the *r* strategy, but, from an evolutionary perspective, each is an adaptation to past and prevailing conditions.

With the causal link between mortality and life history in mind, consider *Fishtown* and *Belmont*. Eighty percent of white federal prisoners between the ages 20–49 came from Fishtown, while 2 % came from Belmont. Furthermore, the 2,392,000 white parolees recorded in 2008 were overwhelmingly residents of *Fishtown*. It is then important to note that, "the levels of arrests in Fishtown, especially for violent crime, remain far above their levels of earlier decades" (Murray 2012, p. 194). Violent crime is the modern societal proxy for extrinsic mortality (Ellis et al. 2009). Controlling for SES and almost irrespective of property crime, violent crime informs, for instance, cross-national trends toward early childbirth (Griskevicius et al. 2011). In Fishtown, it seems that "persistent mortality cues and persistent resource scarcity appear to lead people to adopt faster life history strategies" (Griskevicius et al. 2011). Such conditions combine to make the future an uncertain prospect, and thereby select for the faster life histories, which emphasize the certainty of the present. On the other side, as Fishtown residents suffer from high extrinsic mortality, they could be thought of as enjoying low intrinsic mortality. The disability services, Medicaid, Social Security Income benefits, and unemployment assistance funded by wealth transfer payments from higher income strata limit intrinsic mortality; they insulate from the Malthusian[3] state of nature that is red in tooth and claw.

The opposite holds true for Belmont residents. They enjoy extremely low levels of violent crime and have sufficient law enforcement, health behaviors, and medical coverage to regard a single prime-aged adult death as a news capturing tragedy (Hewlett et al. 2000).[4] While residents of Belmont benefit from what is possibly the lowest rate of extrinsic mortality that any set of interbreeding humans ever experienced, they in some subjective sense also still operate under high levels of intrinsic mortality. Certainly, they will not die from cold or starvation, even should they stop working all together; and so despite any behavioral changes, current Belmont residents will still be part of the national population. However, it does not follow that they will be part of the insular, interbreeding Belmont population. To gain entry into Belmont, and stay within it, one must surmount the economic barriers imposed by astronomical real estate taxes and exorbitant home sale prices, while paying rates of payroll, income, inheritance, and sales tax that not only scale linearly with income but increase the bracket at which one are taxed. Belmonters also fund much of the wealth transfer payments made to Fishtowners. All of this requires planning, hard work, and delay of gratification. Just as violent crime is a modern proxy for extrinsic mortality, this kind of hardship is a modern proxy for intrinsic mortality. The Belmont resident may not be under the yoke laboring against the cold to survive, but he is at the desk laboring against the odds to survive as a Belmonter.

## 5.2 How Do Life Histories Change in Persons and Populations?

The answer is complex. In abstract, it is this: The environment, most specifically its mortality regime, changes as a function of space, time, and structure,[5] to which humans react facultatively, developmentally, and genetically.

The ratio of extrinsic to intrinsic mortality can vary in space: First, there is physical geographic variation via clinal change in latitude and longitude, altitude and aridity, and seasonality and severity. Second, environments change with time. Eccentricity (Shackleton 2000), axial tilt (Rubincam 1995), precession of the equinox (Kutzbach and Otto-Bliesner 1982), glaciation (Clark et al. 2001), wind systems (Trauth et al. 2000), Milankovitch cycles (Bennett 1990), Heinrich events (Jennerjahn et al. 2004), and oceanic currents (Stouffer et al. 2006) are among the many variables that can fluctuate temporally (Marsh and Kaufman 2013). Geographic and temporal environmental variation directly alters the prevailing mortality regime under which humans operate, but geographic and temporal environmental variation also changes the flora and fauna which we alternately struggle with, and benefit from (Sherrat and Wilkinson 2009). As temperature, moisture, insolation, and seasonality vary, so too will predators (Levy et al. 2016; Upadhyay and Iyengar 2005; Alebraheem and Hasan 2014), parasites (Nealis et al. 1984; Fels and Kaltz 2006; Blanford et al. 2013), pathogens (Gill and Reichel 1989; Cooper et al. 2007; Paul 2012), and prey (Pike-Tay and Cosgrove 2002; Hambäck 1998; Keuroghlian and Passos 2001). Consequent effects on mortality can be extreme (Hertler 2016; Low 1988; Connah 2001; Landes 1998). By way of example, hold time constant and ignore all other variables, to consider only latitudinal changes in malarial infection. The moist warmth of tropical habitats like those found in West Africa are conducive to two mosquito species carrying deadly malaria (Bush et al. 2001, page 87, table 3.14) with the result that nine of ten childhood deaths from malaria occur in Africa (Wertheim et al. 2012, p. 15; Snow et al. 2001). Adult mortality is also significant. Malaria requires programmatic intervention for the commonplace hazard it presents to pregnant mothers and their developing young in Zambia (Chaponda et al. 2015), Malawi (Boudová et al. 2015), Uganda (Mbonye et al. 2016), Sudan (Sharief et al. 2011), Benin (Alvarez 2015), Nigeria (Uzoh et al. 2015), and other portions of Africa contained within, or approaching, $16^0$ north and $20^0$ south latitude with sufficient precipitation to support tropical and subtropical conditions (Bush et al. 2001). Additional correlates of malaria, for instance, miscarriage (Stivala 2015) and mental illness (Idro et al. 2016), though not factored into mortality estimates, are indirectly relevant to them.

As Quinlan (2007) stated, it is difficult to imagine how assiduous parental effort could meaningfully reduce "vector-borne pathogens like malaria." This source of mortality is highly extrinsic. It can be mitigated against only by early reproduction that engenders large, diverse broods (Fincher and Thornhill 2012). Alternatively, late Medieval and Early Modern Europe was threatened by exposure and starvation and responded by dramatically delaying marriage and childbirth; a trend that continued with the result that, according to some estimates, only 55 % of fertile women were bearing children by the seventeenth century (Huppert 1998). As Huppert (1998, p. xi) describes, "we will find the demographic pattern whose most obvious component is the voluntary limitation of births among the mass of population by means of delayed marriage." This voluntary limitation is only voluntary in that it was chosen by necessity as the lesser of two evils. As Huppert (1998, p. xii) makes clear, active demographic restriction is increasingly,

> Thought to have been conditioned by the catastrophes of the 14th century and later recurrences of famine and disease which struck whenever the population reached the level of density and compatible with Food Supplies of nourishment that be drawn from some from the available land for the 14th century there was still some room for population growth after the 18th century but the food supply and employment opportunities were to become more flexible as a result of industrialization and global trade. It was only in the early modern period that precarious balance between resources and consumption could not be upset without the gravest consequences . . .

While it can fluctuate annually, dearth is largely a product of seasonality. This source of mortality is then highly intrinsic (Griskevicius et al. 2011).

It can be predicted and controlled; it responds to delayed reproduction, stable marital unions, smaller brood size, future-oriented laboring, and other markers of the slow life history (Brumbach et al. 2009; Ellis et al. 2009).

The question then becomes, *how are life histories adjusted to environmental mortality regimes?* The answer is that life histories change facultatively, developmentally, and evolutionarily. First, people facultatively make life history relevant trade-offs to some degree, as illustrated by a series of experiments that "unconsciously primed people's attitudes towards safety and mortality and thereafter asked them questions about reproduction including if and when they would have children" (Griskevicius et al. 2011). So life history relevant decisions can, to some extent, be altered cognitively in real time. Second, early in development there is a sort of sensitive period, a developmental window wherein a slow or fast life history trajectory is taken (Ellis and Essex 2007). As acacia tree stems regrow with formidable thorns after being browsed upon (Milewski and Madden 2006), or water fleas develop a protective carapace in the presence of predatory fly larva (Travis 2009), human children may demonstrate a binary form of irreversible *phenotypic plasticity*,[6] compressing life history when imprinted by proxies of extrinsic mortality, such as father absence, abuse, neglect, and violent crime (Griskevicius et al. 2011). It is akin to using tonight's weather forecast to choose tomorrow's attire. The plant's thorn, the insect's carapace, and the human's compressed life history represent a simple form of developmental learning; they are investments in future survival undertaken in reaction to past threats. In ancestral environments and in modern environments with low social mobility, one's childhood environment is a useful heuristic predictor of one's adult environment. From hence came a degree of phenotypic plasticity (Stearns and Koella 1986; Stearns 1992) in the form of a crude binary switch, shunting one toward the fast or slow end of the life history spectrum (Del Giudice et al. 2009).

Third, there is a substantial genetic component to life history, upon which evolution acts. As Figueredo et al. (2006) report, "sexual behavior, marriage and divorce, fertility desires, fertility ideals and expectations, age of first explicit attempt to get pregnant, completed family size, and parenting behavior" all show substantial genetic influence and at least moderate heritability estimates. The same holds for intelligence and executive function (Wenner et al. 2013) as well as conscientiousness and its behavioral correlates (MacDonald 1997). So it follows that the meta-trait of life history also has a substantial genetic component (Figueredo et al. 2004; Sherman et al. 2013). Specifically, life history heritability estimates often range between .60 and .70 (Figueredo et al. 2004; Figueredo and Rushton 2009), though as discussed thoroughly by Figueredo et al. (2006), exact estimates vary by method and measure: When using the *K-Factor, Covitality, Genetic Super-K Factor*, or *General Factor of Personality*, heritability estimates were respectively reported to be .65, .52, .68, and .59. "This finding," Figueredo et al. (2006) write, "supports the hypothesis that life-history strategy is predominantly under the control of regulatory genes that coordinate the expression of an entire array of life-history traits." A meta-analysis conducted by van der Linden et al. (2010) suggests more modest estimates of approximately .50 (Figueredo et al. 2013). A review by Figueredo et al. (2004), though it reports some estimates extending to .90, is generally consistent with the above mentioned meta-analysis, placing most estimates between .40 and .60. Clearly then, mortality regimes shape lineages as much as persons. Facultative and developmental shifts take place across a narrow range of genetically defined values to determine the ultimate phenotypic expression of the adult life history.

## 5.3 HOW MIGHT A LIFE HISTORY FRAMEWORK BROADLY INFORM POLICY?

The preceding sections of this paper provide the necessary information to broach policy. We know that the "social problems" lamented in *Coming Apart* are (1) expressed as coordinated life history complex, (2) genetically, developmentally, and facultatively informed, and (3) an adaptive response to high extrinsic mortality. Lacking a biological perspective, one sees arrows of causality extending in all directions, circling back on one another in vertiginous complexity. A life history perspective does not necessarily invalidate all of these complexities, but it does impose rigor, order, and directionality. Mortality is primary. All these many manifestations of the fast life history that are considered social problems are properly recast as adaptations to high extrinsic mortality. Some of the abovementioned variables, such as father absence and poverty, are causal mostly in that they are correlates of extrinsic mortality, while others, such as low marriage rates and early births, are consequences of extrinsic mortality.

It follows that, to reduce "social problems," one should reduce extrinsic mortality. Decreasing extrinsic mortality is an effectual and humane way to slow the life history of a subpopulation. The life history literature clearly designates violent crime as modernity's most salient form of extrinsic mortality (Ellis et al. 2009). Recall that violent crime strongly predicts age at first birth, and family planning generally, which is a central life history marker (Griskevicius et al. 2011). The salience of violent crime gives it outsized influence. One does not have to be victimized. Just witnessing rape, assault, and murder can relate to facultative and developmental changes (Chisholm 1999). Under conditions of excessive violent crime, *K* selected lineages, children that developmentally imprinted on a *K* selected strategy, and adults that facultatively express *K* selected behavior, are all systematically disadvantaged (van der Linden et al. 2015; Dunkel et al. 2013). The speed of life history is an environmental adaptation, not fundamentally different from, for instance, the color of an animal's pelt. Brown in summer, white in winter, the snowshoe hare seasonally molts to match the ground beneath its feet. Brown is not better than white, except relative to its backdrop. Accordingly, one should avoid promoting brown fur in winter, just as one should avoid promoting *K* selected values under conditions of high extrinsic mortality; it runs counter to both nature and logic. If one wants a *K* selected society, one is best served by reducing the violent crime responsible for favoring the *r* selected strategy. While they may have some efficacy, national programs that discourage father absence, teen pregnancy, school dropout and persistent poverty[7] neither recognize nor ameliorate the extrinsic mortality that make father absence, teen pregnancy, school dropout, and persistent poverty rational facultative, developmental, and evolutionary responses. They trim the branches and neglect the root. These policies ask their beneficiaries to behave contrary to the reality in which they live.

Nonetheless, decreasing extrinsic mortality is tantamount to removing a selective pressure favoring a fast life history, or alternatively, removing an impediment against the development of a slow life history. Only increasing intrinsic mortality actively promotes *K*-selected evolution.[8] Yet, while decreasing extrinsic mortality is both effectual and humane, increasing intrinsic mortality is only effectual to the degree that it is inhumane. Evolution proceeds by differential destruction. To produce maximal pressure on the American population through intrinsic mortality would amount to the complete withdrawal of all humanitarian effort. Such a withdrawal of a basic assurance of food, shelter, and healthcare will remind many of passive eugenic interventions (Johan et al. 1999; Bashford and Levine 2010). As Richard Dawkins has said, a society based on applied evolutionary principles might be the worst of all possible societies.

Moreover, long before either Dawkins or life history evolution, and only shortly after evolution's first formulation, Darwin wrote of this bind between humane action and effectual selection:

> We civilized men . . . do our utmost to check the process of elimination; we build asylums for the imbecile, the maimed, and the sick; we institute poor-laws; and our medical men exert their utmost skill to save the life of every one to the last moment . . . Thus the weak members of civilized society propagate their kind. No one who has attended to the breeding of domestic animals will doubt that this must be highly injurious to the race of man.[9]

Though as Hofstadter (1944/1992, p. 91) states, this only showed Darwin to recognize social philanthropy to alter the selective regime, and it did not follow that Darwin advocated eradicating the former to preserve the latter unchanged. The social instincts in mankind, altruism, sympathy, empathy, charity, and their like, what Darwin thought to be the "noblest part of our nature" (Hofstadter 1944/1992, p. 91), are pitted against positive eugenic selection, and even negative eugenic selection through inaction.

To those attempting to progress from understanding to application, it is not only important to question the humanity of means but the objectivity of ends. The same evolutionary perspective that explains *r*-selected behaviors refutes their absolute inferiority. This is not a species of relativism, moral, or postmodern. On the contrary, it is only inescapable logic of the most hard-nosed evolutionary variety. The false aegis of a Boasian[10] explanation obscures the evolutionary origins of *r*-selected behavior, which in turn allows them to be judged inferior social ills. In contrast, evolution eschews the language of *good* and *bad* in favor of *adaptive* and *maladaptive*. It therefore follows that *r*-selected traits are not social ills, but adaptations to circumstances, just as white fur is an adaptation to snow covered turf. Equally, evolutionary understanding hamstrings pretensions to context-independent *K*-selected superiority. Evolutionary insight must marry explanation and implication. By this it is meant that one must *not* understand *r*-selected behavior as the evolved pattern it is, only to incongruously continue to think it objectively and absolutely inferior. At the risk of repetition for the sake of clarity, one can only say that *K*-selected behavior is superior relative to conducive environments and specific selective pressures. Alternatively, one must acknowledge that within other environmental contexts and under different selective pressures, *r*-selected behavior is superior. It follows, that in advocating for the *K*-selected values Murray laments the loss of, one is taking a position as a partisan engaging in value judgment. This is not to condemn the value judgment but only to deny to it the imprimatur of evolution.

## 5.4 What Is the Rationale for Homogamous Mating?

*Homogamy*, defined by Murray (2012, p. 61) as the "interbreeding of individuals with like characteristics," is also known as *assortative marriage* (Murray 2012; Schwartz and Mare 2005), or more commonly, *assortative mating* (Burley 1983) or *assortative pairing* (Figueredo and Wolf 2009). The like characteristics examined in *Coming Apart* are education and intellect. The highly educated paired off. The same seems to hold for intelligence. Sociocultural changes over the last 50 years have increased the ability to actualize educational and intellectual homogamy. First, a proportional increase in jobs demanding education and intelligence creates a market pressure for these increasingly valuable commodities. Second, the highly intelligent, being more valued, are then more efficiently and meritocratically separated from the general population through the college sorting machine. Elite institutions are attended, much more than previously, by the very smart. The very smart more routinely becomes the very educated. Thus, educational homogamy becomes more or less synonymous with cognitive homogamy. The cognitive elite attending prestigious colleges forms connections among themselves, meet and marry, jointly attend graduate schools, and thereafter find themselves at the same conferences and working the same jobs. Not only are elites pairing off in couples, they are forming communities. The resulting *super-zips*, zip codes populated by the wealthy, educated and intelligent, become refugia, distinct in culture, class, and climate.

Educational and cognitive homogamy is part of a larger process of life history homogamy that is most directly studied in two articles by Wolf and Figueredo: *Assortative pairing and life history strategy* and *Fecundity, offspring longevity, and assortative mating: Parametric tradeoffs in sexual and life history strategy*. To understand such explanations of how life history drives mating patterns, it is important to pair the aforementioned distinction between intrinsic and extrinsic mortality with a general understanding of the function of sex (Smith and Maynard-Smith 1978). Large, long-lived organisms evolved sex as a weapon against *Muller's Ratchet* and the *Red Queen*.[11] The accumulation of deleterious mutations is controlled for by outbreeding. Then there are the pathogens and parasites, relentless sources of extrinsic mortality. The evolutionary speed of the short-lived microorganism could only be checked by sexual reproduction (Sherrat and Wilkinson 2009). Yet, sexual reproduction creates more than a unique immunological profile; it produces lineal diversity in risk acceptance, personality, dominance, and many of the life history variables discussed within this article, such as growth rate, age at first reproduction, and time orientation. This additional diversity is beneficial to the *r* strategy. War and unrest, famine and drought, immigration and emigration, along with parasite and pathogen pressure, bring unpredictability and risk, thereby selecting for the *r* strategy of procreating early and often with different individuals. The *r* strategist, having on balance more partners, is then less choosy about any particular partner; but more than this, the *r* strategist practices *negative assortative mating*, purposefully seeking dissimilarity, which, in turn, creates brood diversity. Brood diversity is desirable in that it is a beneficial hedge against unpredictable stressors. Again, this is not pathology. It is rather a rational response, and an evolved hedge against high extrinsic mortality that might otherwise kill the nulliparous young adult couple and the small, similar set of children (Figueredo and Wolf 2009).

The *r* strategist maximizes the recombinatory change of sexual reproduction, whereas the *K* strategist minimizes it. In contrast to the negative assortative mating of the *r* strategist, *K* strategists practice *positive assortative mating*; they will more assiduously follow the dictates of *genetic similarity theory*[12] (Rushton et al. 1984; Rushton 1990), mating with those similar on a variety of biological and cultural life history characteristics. Having been exposed to low extrinsic and high intrinsic mortality in their developmental histories and ancestral past, the *K* selected will mate in a manner that *minimizes* the recombinatory diversity natural to sexual reproduction[13] and consequently produce offspring, fewer in number and more similar to one another (Figueredo and Wolf 2009). This is because "stable, predictable, and controllable environments put a selective premium on lower rates of genetic recombination to preserve the integrity of locally well-adapted, and perhaps co-adapted genomes" (Wolf and Figueredo 2011). In contrast to the *r* strategist that has no predictive power or coping mechanism to contend with high extrinsic mortality, the *K* strategist is the embodiment of a successful algorithm, capable of dealing with predictable and controllable intrinsic mortality. The latter will not look to scramble, but to preserve, their life history related variables by finding a like partner. The preference for the slow life history partner and the slow life history itself have become genetically intercorrelated (Figueredo and Wolf 2009; Wolf and Figueredo 2011; Olderbak and Figueredo 2010). In this light, the college sorting machine and its corollaries are vehicles, not simply for the creation of intellectual, educational, and economic homogamy, but for life history homogamy; the college sorting machine actualizes the slow life history strategist's inherent drive to mate with one another. When understanding intellectual, educational, and economic homogamy more broadly as life history homogamy, the urgency of Murray's message is augmented by the knowledge that (1) life history traits have a moderate to strong heritable component; (2) form an intercorrelated complex; (3) are accompanied by a rational and genetic disposition to assortatively mate; (4) assortative mating is such a powerful evolutionary force that it can promote within species diversity within a population not isolated by distance (Wolf and Figueredo 2011).[14]

## 5.5 WHAT ARE THE IMPLICATIONS OF ELITE MIGRATION AND ISOLATION?

Initially facilitated by the college sorting machine, homogamy is then perpetuated by the *bubble* and the *superzip*. As with homogamy, the *K* selected also are naturally inclined toward the *bubble*[15] described in *Coming Apart*. Think of Murray's thesis in light of the *K* strategist's innate inclination to act the part of the beaver, seeking and creating conducive environments. Prior to the college sorting machine and the presence of homogenous, contiguous and insular superzips, *K* strategists were interspersed more evenly across the general population. Educated and intelligent, religious and moral, altruistic and able, the *K* strategists blessed their communities with organization, rectitude, high culture, law and order, family structure, and like virtues. As described, they not only raised the mean but set and enforced social norms. In other words, they engaged heavily in aforementioned process of *niche construction*. They were trying, and largely succeeding, in creating predictable and orderly environments that were conducive to their slow life history strategy. In actualizing this selfish imperative, they helped the communities they lived in. By way of example, consider the thirty odd years that Benjamin Franklin graced early 18th-century Philadelphia. Exemplifying the slow life history, Franklin reacted against correlates of extrinsic mortality such as disease, the robbery of his home, the threat of the frontier, the specter of foreign invasion, and the burning of the southern end of town, by agitating for hospitals and refuse removal, instituting a night watch and lighted streets, organizing and serving in the state militia, submitting the Albany Plan of Union, and promoting fire brigades and fire insurance. At the same time, he actualized his inclination for social capital by contributing to the formation of his scholarly Junto, establishing subscription and lending libraries, and laying the groundwork for the American Philosophical Society and the University of Pennsylvania. Then London called, and Franklin left (Olson 2004; Houston 2008).[16]

With the college sorting machine and the presence of superzips, *K* strategists have an alternative. By attending the elite institution and moving to the elite neighborhood, they greatly reduce their efforts in niche construction, and instead, engage in the relatively easier process of *niche seeking*. Elites always engaged in both niche construction and niche seeking, but now it is possible to emphasize the latter over the former. They find their dam rather than build it. Elites are heading for London, to the detriment of Philadelphia. The American ethos is no longer reinforced by altruistic punishment and stigma. It is as Murray (2012, p. 294) charges: Elites no longer promulgate the norms they continue to profitably live by. They have abdicated this responsibility because migration has removed motivation.[17] As Murray's narrative explains, elite extremes of cultural tolerance and political correctness arose with isolation. Once isolated, elites could indulge in a postmodern egalitarianism that failed to champion *K* selective values. The social ramifications alone are concerning. Add to this the developmental nature of life history evolution, which suggests a positive feedback loop wherein unstable neighborhoods comprised of *r* strategists will beget more and more *r* strategists, which will in turn beget additional instability. More than this, the genetic component of life history evolution suggests a temporal stability in the differences that separate Fishtown from Belmont. Consequently, Murray might indeed have documented what will amount to a major force in the continuing evolution of a modern human population[18]; and one that will likely not be limited to the United States. The contiguity of superzips will function, in some small way, like the evolutionary process of drift, while the college degree and high paying job will remain the human social equivalent of the avian display of vivid color patches and full plumage. With several generations of homogamy, American life history variance, once distributed across a broad plateau, may grade toward two increasingly divergent bell curves.

## NOTES

1. As reviewed by the present author (Hertler 2015c) and treated in other sources (Raath 1990; Gross 1996; Leimar et al. 2006; Pfennig and Pfennig 2012), morphs are extremes of morphological and behavioral variation contained within a species. Combing close paraphrasing and quotation from Hertler (2015c), the following passage illustrates morphological variation through one of its acknowledged exemplar species:

   > *Uta stansburiana*, the male side-blotched lizard, while still being contained within the same species, has three distinct behavioral and physical forms: The large orange throated lizard is aggressive and dominant; the dark blue throated lizard is highly territorial, staking a modest claim but defending it vehemently; the yellow throated lizard is furtive, stealing copulations from unsuspecting conspecifics (Bodine 2003). In effect, a side blotched lizard can survive by brute force, vehement territoriality or clandestine treachery. All three morphs are competing for the same goal (mating opportunities), but doing so with distinct strategies and correspondingly distinct physical forms (Hawley 2011). In five of the six years of observing these competing lizard factions, the aggressive orange throated lizards were superior, meaning that orange lizards were more successful than blue and yellow rivals in securing mates and producing offspring (Bodine 2003). While proportions fluctuate annually, it seems that the dominance of orange throated lizards cannot drive the other two morphs from representation within the population.

   If there were, by happenstance, an excessive abundance of dominant orange throated lizards, the territoriality of the blue throated lizard and the stealth of the yellow throated lizard would become more adaptive, thereby correcting the imbalance. Aside from this example, morphological variation has been catalogued in many phylogenetically diverse species.
2. Asymmetrically fissile bacteria simply imply non-symmetric division during replication. Instead of budding along a midline or a midpoint, asymmetrically fissile bacteria bud by cleaving a small portion of their total size.
3. Malthusian is the adjectival use of Malthus, referring to Thomas Robert Malthus (1878), an English divine and early demographer who wrote *An Essay on the Principle of Population: Or, A View of Its Past and Present Effects on Human Happiness, with an Inquiry Into Our Prospects Respecting the Future Removal or Mitigation of the Evils Which It Occasions.* As described by Cremaschi (2015) or Hughes (2015), for instance, one finds that Malthus's writing on competition influenced Darwin's conception of natural

selection. This is because selection of superior over inferior types can only occur amidst finite resources.

4. Hewlett, Lamb, Leyendecker, and Schölmerich, (2000, p. 160) are cited here because they conducted an anthropological study from a life history perspective wherein the Aka and Ngandu peoples of Africa were compared with "Euro-American households . . . located in relatively wealthy suburban Washington, D.C." As Hewlett and colleagues document, "infant mortality in such communities is less than 1%, child mortality less than 5%." Hewlett et al. additionally report that "Mid-adulthood mortality is rare in upper-middle-class communities, and chronic diseases are the primary causes of death in adulthood (e.g., coronary artery disease, cancer)." So, in what seems to be a wealthy superzip in the greater Washington area, the *K* strategy is expressed and is consonant with the low extrinsic mortality of the environment.
5. Hiding behind the word *structure* is an unfortunate morass of complexity. The body of the text will describe how the environment changes across space and through time, but it avoids the important issue of the social environment. Physical and temporal environmental change certainly drives life history evolution, but humans themselves, in competition with one another, actually drive much within population variation across life history traits. This is why it is possible to get the great degree of life history variation that Murray describes even within White America which descends more or less exclusively from Europe. To pursue this topic fully, the reader is referred to Hertler (2015c) which describes the same process while treating the overlapping concept of personality. To pursue the theme presently, the following synopsis is provided:

> Certain biological traits work best in one form, and so are driven to fixation. Fixation indicates no variation. Very often, evolution grinds forward in this way, enforcing a homogenizing tendency; ensuring that the one best solution, whether it is acute vision or bipedalism, continues as the only solution. Alternatively, there are traits which are *selectively neutral*. Evolution does not stoop to notice them. These traits are allowed to vary because they are not affected directionally by evolutionary pressures. Variants α and β are equally functional, so no homogenizing tendency operates. Life history, like personality style and immunological profile, is among those few traits that are both *evolutionarily important* and *stably diverse*. Such traits vary because no one value is best; rather a particular value represents a tradeoff that will bring advantages and disadvantages. A range of values across the trait results. On such a trait, a population will exhibit a mean around which all members will fluctuate. Graphically, a trait like life history, though it

will have a mean, will not form a peaked bell curve, but one flattened by excessive standard deviation. The mean, and the persons and familial lines that populate it, is ultimately calibrated by the environment. Were the environment stable and predictable, we would likely see less life history heterogeneity than we now observe. However, in addition to the physical and temporal variation described in the body of the paper; the environment also "can be conceptualized as social, and its variation can be conceptualized as socially generated" (Hertler 2015c; Gutiérrez et al. 2013). So with this, there are three sources of life history variation: geographic, temporal, social.

White America, though approximating an interbreeding population, will still derive moderate life history variation from the first source of environmental heterogeneity, being that it is a nation of immigrants. The second form of environmental heterogeneity can come slowly via climatic shifts or rapidly via anthropogenic change. Either way, staying in the same place is not a guarantee of the stability of an environment or its selective regime. The third form, the socially imparted source of environmental heterogeneity, most powerfully creates and maintains diversity. Diversity of types creates a mosaic of niches, often likened to a coral reef (Sherman et al. 2013). Again, in consequence of the joint operation of these forms of environmental heterogeneity, one does not get a bell curve, so much as a plateau or continuous distribution across which tradeoffs are made between somatic maintenance and reproductive effort, quality and quantity of offspring, late and early reproduction, which may have differential payoffs in the contexts of peace and war, surfeit and want, safety and violence. With unending phenotypic plasticity disallowing full facultative shifts in behavior, individuals are consequently selected to fall somewhere along the life history continuum. Thus $r$ and then $K$ strategists will be favored more or less across space, through time and within micro-niches.

6. *Phenotype* refers to the ultimate expression of observable behavior; while *plasticity* refers to flexibility. Phenotypic plasticity is essentially the opposite of reflex and instinct. A behavior or organism is phenotypically plastic to the extent that they adjust their behavior to present demands.
7. This remark can apply to programs like the National Educational Association's Action Plan for Reducing the School Dropout Rate http://www.nea.org/home/18106.htm), but mostly refers to the many national campaigns now in place:

   1. National Responsible Fatherhood Clearing House 1. https://www.fatherhood.gov/for-programs/federal-programs-and-resources
   2. Promoting Responsible Fatherhood 2. http://fatherhood.hhs.gov/

3. The National Campaign to Prevent Teen and Unplanned Pregnancy (3. http://thenationalcampaign.org/)
4. The President's Teen Pregnancy Prevention Initiative (4. http://www.cdc.gov/teenpregnancy/prevent-teen-pregnancy/)
5. https://www.whitehouse.gov/the-press-office/president-obama-announces-steps-reduce-dropout-rate-and-prepare-students-college-an

This link describes how the "Obama Administration has committed $3.5 billion to fund transformational changes in America's persistently low-performing schools. Additionally, the President's FY 2011 budget includes $900 million to support School Turnaround Grants. President Obama also emphasized the importance of investing in dropout prevention and recovery strategies to help make learning more engaging and relevant for students, and announced new efforts to invest $100 million in a College Pathways program to promote a college readiness culture in high schools, through programs that allow students to earn a high school diploma and college credit at the same time."

8. This can be seen when elephants or other undulates find their way onto a predator free island. While resources remain abundant, their life histories remain stable (Hertler 2016). Also, see MacDonald (1997) who discusses how resource gluts can actually promote a fast life history.
9. Darwin 1874, *Descent of Man*, pp. 151–152; quoted in Hofstader 1944/1992, p. 91)
10. *Boasian* is the adjectival use of Boas, the surname of Franz Boas, an influential German-American anthropologist famed for his ostensible refutation of hereditarian, biological, and Darwinian explanations. With Margaret Meade, Robert Lowie, Alfred Kroeber, Ruth Benedict, Otto Klineberg, and others of note among his students, Boas perpetuated a non-reductive and circular explanation of human nature and cultural variation. In the words of Meade, "we are forced to conclude that human nature is almost unbelievably malleable, responding accurately and contrastingly to contrasting cultural conditions" (Degler 1991, p. 134).
11. Muller's Ratchet, named for H. J. Muller, refers to the way in which asexually reproducing organisms accrue mutations across generations, which cannot be shed (Muller 1964). Mutations ratchet upward. Sex brings genomic recombination; and recombination allows mutations to be purged and counterweighted (Felsenstein 1974; Crow 2005). The Red Queen, named for Lewis Carroll's *Alice in Wonderland* character, denotes an evolutionary arms race between species. The pathogens that we contend with have very short lives. Some bacteria reproduce every 20 minutes, and this fast generation time allows them to evolve extremely quickly (Sherrat and Wilkinson 2009). This can be seen in multiple drug-resistant bacteria.

Additionally, bacteria have mechanisms that actively augment their mutation rates under times of stress. Viral strains also mutate routinely and rapidly. Human generation times are so much slower that we could never match the pathogenic rate of mutation. Instead, variation is gained by sex rather than mutation. By recombining sexually we create unique persons, distinct in chemistry, distinct in natural flora, and distinct in immunological profile. The operation of both Muller's Ratchet and the Red Queen can be observed in non-obligate sexually reproducing organisms, those that can choose to reproduce sexually or asexually. Among non-obligate sexual reproducers, earthworms near Chernobyl exposed to radiation were observed to more routinely outcross (Wolf and Figueredo 2011) and experimental introduction of bacteria increases outcrossing among *C. elegans*, a type of round worm (Morran et al. 2011).

12. "Building on the work of Hamilton (1964), Dawkins (1976), Thiessen and Gregg (1980), and others, the kin-selection theory of altruism was extended by Rushton in his *Genetic Similarity Theory*. Rushton et al. (1984) proposed that, if a gene can better insure its own survival by acting so as to bring about the reproduction of family members with whom it shares copies, then it can also do so by benefiting any organism in which copies of itself are to be found. This would be an alternative way for genes to propagate themselves. Rather than merely protecting kin at the expense of strangers, if organisms could identify genetically similar organisms, they could exhibit altruism toward these "strangers as well as toward kin. Kin recognition would be just one form of genetic similarity detection" (Rushton 2000; p. 74). What Rushton is saying is this: We favor and sacrifice our interests to relatives sometimes because they share our genes . . . we ally with family because they are related to us . . . extending this, he is saying that we ally with similar others because they possibly are more genetically related to us then dissimilar others. This explains xenophobia, in-group preferences, as well as attraction to friends and mates that are like us not only racially but across a wide spectrum of emotional, value-based, and behavioral traits.
13. This will not apply to immunity; but it does apply to values, behaviors, and life history traits (Thornhill and Gangestad 2008).
14. Assortative mating can effect population change even without the traditional barriers of space, rivers, and mountain ranges. Assortative mating can even lead to speciation; a type of speciation called sympatric speciation which has taken place among the cichlid fish of Lake Victoria (Johnson et al. 1996) and is even now thought to be driving speciation in mole rats, cicadas, and the European corn borer moth (Wolf and Figueredo 2011).
15. Murray uses the term *bubble* to refer to an insulating subculture of elitism that limits contact with those outside elite areas. He uses a self-rating to

measure the thickness of his reader's bubbles, asking about anything from beer preferences to television use.

16. Some of this information and much of its ordering was also taken from a timeline that can be found at: www.ushistory.org/franklin/info/timeline.htm
17. Of course, there is a potential and oft realized dark side to elite contributions, which take various forms including social control, oppression, exploitation, slavery, peonage, and the like. Elite *K* strategists, like all other people and organisms, are inherently self-interested. So, while their pursuit of self-interest may raise the mean standard of living and community functionality, because their motivation is subject to conscious and unconscious self-interested calculation it might also be detrimental.
18. A millennium of genetic drift in Iceland (Wade 2006) and the medieval augmentation of Ashkenazi Jewish intelligence (Cochran and Harpending 2009) are among the examples of rapid evolutionary change documented within historical times, which support the recent understanding that human evolution, rather than stopping at the end of the Paleolithic Era, continued into modernity and is still occurring.

## CHAPTER 6

# The Biology of Sociology: Pitting Ideology Against Elegance

**Abstract** Were explanatory, scientific explanations gauged by merit alone, the sixth chapter would hardly be necessary. In recognition of the realities of intellectual history, this chapter anticipates the resistance that may result from explaining Murray's sociological data biologically and evolutionarily through life history theory. Objections are still raised against evolution, especially when applied to humans, and most especially when applied to human behavior. As such, life history theory, given that it is a sort of meta-theory that aggregates and explains much of human behavioral variation, will likely encounter resistance in this application, as it has in others. Herein, some of that intellectual history is reviewed, while projected concerns are addressed.

**Keywords** Wilson · sociobiology · Rushton · yoked · parsimony

In 1925, decades after the publication of *On the Origin of Species*, and in the midst of T*he Modern Synthesis*,[1] the *American Civil Liberties Union* recruited Thomas Scopes to challenge Tennessee law on the teaching of evolution. Reading the trial transcript is striking because of the religiosity that pervaded the judge and jury and for the divide, already yawning as a chasm, between the lay and scientific reception of evolution. The ideas of Darwin were gaining ground, but had not yet infiltrated the population at large. Most jurists had heard of evolution, some hadn't. They all had

S.C. Hertler, *Life History Evolution and Sociology*,
DOI 10.1007/978-3-319-48784-7_6

limited knowledge of evolution, which was gained through conversation with others nearly as ignorant, or newspaper accounts insufficiently objective. Another source of information was from the pulpit. The judge opened every day with prayer, and not just a few words, but an extended worshipful prayer. When Darrow was held in contempt of court for insulting words that truly needled the judge, the judge forgave him as a Christian, citing bible verses and using Christ as his model of forbearance. When Darrow, the secular and openly antagonistic defense attorney, objected to this, most were highly insulted. In part, it was the person of Darrow, contrasted with the pious renown of William Jennings Bryan, that stoked the trial into a moralistic contest between good and evil, old and new, secular and sacred. Darrow courted controversy in every respect; in his open agnosticism that amounted to atheism, in his defense of boy murders, and in his relations with women. These were among the reasons why Darrow had to insinuate himself into the defense team uninvited (Farrell 2012). Such was the resistance to evolutionary science and the secular humanists in 1920s America.

With a recent Pew Forum survey on religion and science finding that "64 percent of respondents support teaching creationism side by side with evolution in the science curriculum of public schools,"[2] one should not underestimate the tenacity of this divide. This is especially true when evolution is applied to human behavior. One of the most earnest and earliest efforts to do just that came from Harvard entomologist E. O. Wilson and his work *Sociobiology: The New Synthesis*, which featured a final chapter directly broaching human nature. The chapter's placement at the end of the work recalled the placement of the final sentence of Darwin's Origin of Species wherein he addresses mankind.[3] Judging from the chapter itself and what has been said of it by Wilson and his critics, it seems that he was unaware of the ire he was arousing. This ire, important to note, was not a public outcry of the lay community or the devoutly religious; rather it came from down the hall. Led by Richard Lewontin and Stephen Jay Gould, approximately 15 prestigious academics in and outside Harvard assembled against Wilson's Sociobiology in what became known as the *Sociobiology Study Group*, an academic organization originated solely to nip Wilson's sociobiological theory in the bud. Signed by all members of that group, a critique of *Sociobiology* amounting to a denunciation was issued to the *New York Times* as an open letter. Betrayed by its vehemence as much as by its unorthodox method of attack, the

Sociobiology Study Group testifies to the emotional resistance that can overwhelm rational discourse when evolutionarily explaining human behavior, even in recent times, and even among life scientists.

Several academics have then documented the larger resistance to sociobiological explanation in the years that followed Wilson's publication, as it was alternately embraced and renounced. Davis (1986, p. 226) notes that censure and silencing of sciences investigating human biological behavior, such as behavioral genetics, become politicized, inviting differing forms of censure from both left and right, giving *truth little room to maneuver*. Similarly, Degler (1991) tracks the intense resistance that has been mounted in reaction to evolutionary applications to understanding differences between populations. Also, Alves, after reviewing Freud's quote about the three insults to humanity,[4] writes: "Today it is possible to add a fourth blow: that human beings are not only a product of their own environment, but a result of the interaction between culture and genes, which implies the existence of a human nature. This blow seems now to be the most wounding" (Alves 1999, p. 126). Rushton (1999, p. 209) most precisely analyzes the state of evolutionary acceptance, finding that resistance from some quarters did indeed recede, but was counterbalanced as follows:

> Although Darwinians emerged victorious in their nineteenth-century battles against biblical theology in academia and educated opinion, subsequently they lost this ground to liberal egalitarians, Marxists, cultural-relativists, and literary deconstructionists

Also as detailed by Rushton, life history evolution itself is charged with controversy, not from its inception, but more precisely dating to its application to humans. The reflections of J. P. Rushton are surely of value in tracking this vein of intellectual history, as he was the man most responsible for applying the biology of life history evolution to human behavioral variation (Rushton 1999). First he speaks of reactions in prestigious journals; these were often editorials with a decidedly condemnatory tone, such as that published in *Nature*. Condemnations then extended to popular mediums, such as *Time Magazine* and *Rolling Stone*, wherein a categorically negative tone was taken. It is therefore evident that evolutionary explanation of humans retains a marked degree of controversy, controversy which becomes outsized when applied specifically to human behavior.

As such, the biological backstory of *Coming Apart*, like life history evolutionary explanation of psychological and sociological data generally, cannot be productively discussed outside of this context. Wishing it in a vacuum, and hoping it is taken only on its explanatory merits, is unrealistic. The acceptance and impact of this work on the psychologists and sociologists that most care about the data it explains biologically is best advanced alongside a philosophy of science. It is in this spirit that a previously cited (Hertler 2015c) segment of Dumont's *History of Personality Psychology* (2010) has relevance here for its treatment of the intellectual and emotional motivations for resisting biological explanations. Though speaking specifically of the biology of personality, the logic applies equally well to life history, not least because personality is in some part a function of life history. Dumont wrote generally of fears of biological determinism, and then, in Kuhnsian[5] fashion, described the following four factors, as condensed in Hertler (2015c):

> (1) there is the *momentum of tradition*; momentum by which personality psychologists are still much more comfortable with social scientific data as opposed to natural scientific data; (2) many of the scientific methods and technologies that are used to support nature oriented explanations of personality are newly developed, as are the data that they obtain; (3) under the influence of funding, policy and the inclination to clinically treat, psychological research, and the theories that derive from it, are often skewed towards emphasizing controllability; (4) finally, "fluid environmental explanations of personality," as opposed to "fixed biological ones," are consistent with individualism, choice, self-creation and other highly prized Western values.

Again, this commentary on personality applies to the reception of life history evolution as an explanatory paradigm by psychologists describing intrapersonal variables, and sociologists describing interpersonal variables. In battling these four conservative strongholds, one might singly appeal to the principle of parsimony. Parsimony is indeed what Murray is calling for on page 299 of *Coming Apart*, in the passage previously quoted in the introduction of this work. He senses the possibility of an underlying relationship between father absence and juvenile crime, or between child abuse and divorce, for example. Not only does Murray himself call for parsimonious explanation, he looks for it from the biological sciences. Truly, life history evolutionary explanations of psychological and sociological data are elegantly parsimonious in their ability to yoke cognitive variables like encephalization, intelligence, and executive control, to personality variables like conscientiousness, risk assumption, and time orientation, which are in turn ultimately yoked to biological variables like gestation length, timing of tooth eruption, and age of first birth. Life history evolution extends its power and parsimony further by reducing variation in this yoked complex largely to a finite number of testable variables dominated by mortality regime. This is irresistible. Compelling. Inevitable.

## NOTES

1. *The modern synthesis* refers to the marriage of evolution and genetics, which was delayed by Darwin's apparent ignorance of Gregor Mendel's work on pea plants. Through the efforts of J. B. S. Haldane and Ronald Fisher Darwin's evolutionary theory was integrated with Mendel's genetic insights to produce a more rigorous biology of population change that was conceptually, as well as mechanistically, understood.
2. As reported in the Virtual Mentor Ethics Journal of the American Medical Association December 2005, Volume 7, Number 12 Op-Ed Citizen MD by Paul Costello
3. "In the distant future I see open fields for far more important researches. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation. Light will be thrown on the origin of man and his history."

   Darwin, C. (1964). *On the origin of species: a facsimile*. Harvard University Press.
4. "Humanity has in the course of time had to endure from the hands of science two great outrages upon its naive self-love. The first was when it realized that our earth was not the center of the universe, but only a tiny speck in a world-system of a magnitude hardly conceivable; this is associated in our minds with the name of Copernicus, although Alexandrian doctrines taught something very similar. The second was when biological research robbed man of his peculiar privilege of having been specially created, and relegated him to a descent from the animal world, implying an ineradicable animal nature in him: this transvaluation has been accomplished in our own time upon the instigation of Charles Darwin, Wallace, and their predecessors, and not without the most violent opposition from their contemporaries. But man's craving for grandiosity is now suffering the third and most bitter blow from present-day psychological research which is endeavoring to prove to the ego of each one of us that he is not even master in his own house, but that he must remain content with the veriest scraps of information about what is going on unconsciously in his own mind. We

psycho-analysts were neither the first nor the only ones to propose to mankind that they should look inward; but it appears to be our lot to advocate it most insistently and to support it by empirical evidence which touches every man closely."

Good Reads. (June 30, 2016). Sigmund Freud Quotes: http://www.goodreads.com/quotes/429477-humanity-has-in-the-course-of-time-had-to-endure

5. Kuhnsian refers to T. Kuhn, a philosopher of science, some would say a postmodern deconstructionist for sentiments expressed in *The Structure of Scientific Revolutions*. Whatever he is labeled, Kuhn challenged the objectivity of science, exposing not only intuitions and value judgments inherent in the persons of scientists but salutatory changes and community assumptions inherent in the process of science.

# References

Ackermann, M., Schauerte, A., Stearns, S. C., & Jenal, U. (2007). Experimental evolution of aging in a bacterium. *BMC Evolutionary Biology*, *7*(1), 1.

Adams, J. (1992). *The works of John Adams second president of the United States: With a life of the author, notes and illustrations by his grandson Charles Francis Adams Volume II*. Norwalk, CT: The Easton Press.

Alebraheem, J., & Hasan, Y. A. (2014, July). Effects the strength of seasonality on persistence and extinction in prey predator models. In *Proceedings of the 21st National Symposium on Mathematical Sciences (SKSM21): Germination of Mathematical Sciences Education and Research towards Global Sustainability* (Vol. 1605, No. 1, pp. 191–196). AIP Publishing.

Alonso-Alvarez, C., Bertrand, S., Devevey, G., Prost, J., Faivre, B., Chastel, O., & Sorci, G. (2006). An experimental manipulation of life-history trajectories and resistance to oxidative stress. *Evolution*, *60*(9), 1913–1924.

Alvarez, V. M. (2015). *Malaria risk factors in pregnant women and infants in Benin* (Doctoral dissertation, Université Pierre et Marie Curie-Paris VI).

Alves, L. F. (1999). Marx, Darwin and human nature. In M. G. Johan, D. V. D. D. Smillie, & D. R. Wilson (Eds.), *The Darwinian heritage and sociobiology* (pp. 119–134). Westport, CT: Praeger Publishers.

Barrett, S. C. H., Harder, L. D., & Worley, A. C. (1997). The comparative biology of pollination and mating in flowering plants. In J. Silvertown, M. Franco, & J. L. Harper (Eds.), *Plant life histories: Ecology, phylogeny, and evolution* (pp. 57–76). New York: Cambridge University Press.

Barrick, M. R., Mount, M. K., & Strauss, J. P. (1993). Conscientiousness and performance of sales representatives: Test of the mediating effects of goal setting. *Journal of Applied Psychology*, *78*, 715.

S.C. Hertler, *Life History Evolution and Sociology*,
DOI 10.1007/978-3-319-48784-7

Bashford, A., & Levine, P. (Eds.) (2010). *The Oxford handbook of the history of eugenics*. New York: Oxford University Press.

Baumeister, R. F. (2005). *The cultural animal: Human nature, meaning, and social life*. New York: Oxford University Press.

Bellingham, P. J., & Sparrow, A. D. (2000). Resprouting as a life history strategy in woody plant communities. *Oikos*, *89*, 409–416.

Belmont Massachusetts. (2016, June 25). History & facts.

Belsky, J., Schlomer, G. L., & Ellis, B. J. (2012). Beyond cumulative risk: Distinguishing harshness and unpredictability as determinants of parenting and early life history strategy. *Developmental Psychology*, *48*, 662.

Bemis, S. F. (1956). *John Quincy Adams and the Union* (pp. 63–70). New York: Knopf.

Bennett, K. D. (1990). Milankovitch cycles and their effects on species in ecological and evolutionary time. *Paleobiology*, *16*(1), 11–21.

Bergeman, C. S., Chlpuer, H. M., Plomin, R., Pedersen, N. L., McClearn, G. E., Nesselroade, J. R., . . . McCrae, R. R. (1993). Genetic and environmental effects on openness to experience, agreeableness, and conscientiousness: An adoption/twin study. *Journal of Personality*, *61*, 159–179.

Blanford, J. I., Blanford, S., Crane, R. G., Mann, M. E., Paaijmans, K. P., Schreiber, K. V., & Thomas, M. B. (2013). Implications of temperature variation for malaria parasite development across Africa. *Scientific Reports*, 3, Article number 1300.

Bodine, E. N. (2003). Game theory explains perplexing evolutionary stable strategy. *Math*, *188*, 1–6.

Bodnar, A. G. (2009). Marine invertebrates as models for aging research. *Experimental Gerontology*, *44*, 477–484.

Bogin, B., & Smith, B. H. (2012). Evolution of the human life cycle. In S. Stinson, B. Bogin, & D. O'Rourke (Eds.), *Human biology: An evolutionary and biocultural perspective* (2nd edn, pp. 515–586). Hoboken, NJ: John Wiley & Sons.

Boudová, S., Divala, T., Mawindo, P., Cohee, L., Kalilani-Phiri, L., Thesing, P., . . . Laufer, M. K. (2015). The prevalence of malaria at first antenatal visit in Blantyre, Malawi declined following a universal bed net campaign. *Malaria Journal, 14*(1), 1.

Bowers, J. E., Webb, R. H., & Rondeau, R. J. (1995). Longevity, recruitment and mortality of desert plants in Grand Canyon, Arizona, USA. *Journal of Vegetation Science*, *6*, 551–564.

Bowling, N. A. (2010). Effects of job satisfaction and conscientiousness on extra-role behaviors. *Journal of Business and Psychology*, *25*, 119–130.

Boyce, C. J., & Wood, A. M. (2011). Personality and the marginal utility of income: Personality interacts with increases in household income to determine life satisfaction. *Journal of Economic Behavior & Organization*, *78*(1), 183–191.

Boyce, C. J., Wood, A. M., & Brown, G. D. (2010). The dark side of conscientiousness: Conscientious people experience greater drops in life satisfaction following unemployment. *Journal of Research in Personality*, *44*, 535–539.

Boyd, J. P., & Butterfield, L. H. (1950). *The papers of Thomas Jefferson*. Princeton, NJ: Princeton University Press.

Braendle, C., Heyland, A., & Flatt, T. (2011). Integrating mechanistic and evolutionary analysis of life history variation. In T. Flatt & A. Heyland (Eds.), *Mechanisms of life history evolution: The genetics and physiology of life history traits and trade-offs* (pp. 3–10). New York: Oxford University Press.

Breitwieser, M. R. (1984). *Cotton Mather and Benjamin Franklin: The price of representative personality*. New York: Cambridge University Press.

Brickman, A. L., Yount, S. E., Blaney, N. T., Rothberg, S. T., & De-Nour, A. K. (1996). Personality traits and long-term health: Status the influence of neuroticism and conscientiousness on renal deterioration in type-1 diabetes. *Psychosomatics*, *37*, 459–468.

Brookhiser, R. (2002). *America's First Dynasty: The Adamses, 1735–1918*. New York: Simon and Schuster.

Brumbach, B. H., Figueredo, A. J., & Ellis, B. J. (2009). Effects of harsh and unpredictable environments in adolescence on development of life history strategies. *Human Nature*, *20*, 25–51.

Burke, M. K., & Rose, M. R. (2009). Experimental evolution with Drosophila. *American Journal of Physiology-Regulatory, Integrative and Comparative Physiology*, *296*(6), R1847–R1854.

Burley, N. (1983). The meaning of assortative mating. *Ethology and Sociobiology*, *4*, 191–203.

Bush, A. O., Fernandez, J. C., Esch, G. W., & Seed, J. R. (2001). *Parasitism: The diversity and ecology of animal parasites*. New York: Cambridge University Press.

Campbell, B. (1972). *Sexual selection and the descent of man 1871–1971*. Chicago, IL: Aldine Publishing Company.

Cappon, L. J. (1988). *The Adams-Jefferson Letters: The complete correspondence between Thomas Jefferson and Abigail and John Adams*. Chapel Hill, NC: University of North Carolina Press.

Cardenal, V., Cerezo, M. V., Martínez, J., Ortiz-Tallo, M., & Blanca, M. J. (2012). Personality, emotions and coping styles: Predictive value for the evolution of cancer patients. *The Spanish Journal of Psychology*, *15*(2), 756–767.

Chaponda, E. B., Chandramohan, D., Michelo, C., Mharakurwa, S., Chipeta, J., & Chico, R. M. (2015). High burden of malaria infection in pregnant women in a rural district of Zambia: A cross-sectional study. *Malaria Journal*, *14*(1), 1.

Charnov, E. L. (1993). *Life history invariants: Some explorations of symmetry in evolutionary ecology*. New York: Oxford University Press.

Chen, H. Y., & Maklakov, A. A. (2012). Longer life span evolves under high rates of condition-dependent mortality. *Current Biology*, *22*(22), 2140–2143.

Chinard, G. (1990). *Honest John Adams*. Gloucester, MA: Peter Smith Pub Incorporated.

Chisholm, J. S. (1999). *Death, hope, and sex: Steps to an evolutionary ecology of mind and morality*. New York: Cambridge University Press.

Christensen, A. J., Ehlers, S. L., Wiebe, J. S., Moran, P. J., Raichle, K., Ferneyhough, K., & Lawton, W. J. (2002). Patient personality and mortality: A 4-year prospective examination of chronic renal insufficiency. *Health Psychology*, *21*, 315.

Clark, P. U., Marshall, S. J., Clarke, G. K., Hostetler, S. W., Licciardi, J. M., & Teller, J. T. (2001). Freshwater forcing of abrupt climate change during the last glaciation. *Science*, *293*(5528), 283–287.

Cochran, G., & Harpending, H. (2009). *The 10,000 year explosion: How civilization accelerated human evolution*. New York: Basic Books.

Connah, G. (2001). *African civilizations: An archaeological perspective* (2nd edn). New York: Cambridge University Press.

Conte, J. M., & Jacobs, R. R. (2003). Validity evidence linking polychronicity and big five personality dimensions to absence, lateness, and supervisory performance ratings. *Human Performance*, *16*, 107–129.

Cooper, D. L., Smith, G. E., Edmunds, W. J., Joseph, C., Gerard, E., & George, R. C. (2007). The contribution of respiratory pathogens to the seasonality of NHS direct calls. *Journal of Infection*, *55*(3), 240–248.

Costa, P. T., McCrae, R. R., & Dye, D. A. (1991). Facet scales for agreeableness and conscientiousness: A revision of the NEO personality inventory. *Personality and Individual Differences*, *12*, 887–898.

Cremaschi, S. (2015). Malthus: The life and legacies of an untimely prophet. *Population Studies*, *69*(2), 257–259.

Crews, D. E., & Ice, G. H. (2008). Again, senescence, and human variation. In S. Stinson, B. Bogin, & D. O'Rourke (Eds.), *Human biology: An evolutionary and biocultural perspective* (2nd edn, pp. 637–692). Hoboken, NJ: John Wiley & Sons.

Crow, J. F. (2005). Hermann Joseph Muller, evolutionist. *Nature Reviews Genetics*, *6*, 941–945.

Dalberg-Acton, J. E. E. (1907/1993). *The history of freedom and other essays*. New York: The Classics of Liberty Library.

Darwin, C. (1874). *The descent of man, and selection in relation to sex* (2nd edn.). London: John Murray.

Davis, B. D. (1986). *Storm over biology: Essays on science, sentiment, and public policy*. Buffalo, NY: Prometheus Books.

Dawkins, R. (1976). *The selfish gene*. New York: Oxford University Press.

Dawkins, R. (2004). Extended phenotype—but not too extended. A reply to Laland, Turner and Jablonka. *Biology and Philosophy*, *19*(3), 377–396.

Deary, I. J., Penke, L., & Johnson, W. (2010). The neuroscience of human intelligence differences. *Nature Reviews Neuroscience*, *11*, 201–211.

Degler, C. N. (1991). *In search of human nature: The decline and revival of Darwinism in American social thought*. New York: Oxford University Press.

Del Giudice, M., Angeleri, R., & Manera, V. (2009). The juvenile transition: A developmental switch point in human life history. *Developmental Review*, *29*, 1–31.

Del Giudice, M., & Belsky, J. (2011). The development of life history strategies: Toward a multi-stage theory. *Development*, *2*, 6.

DeYoung, C. G., & Gray, J. R. (2009). Personality neuroscience: Explaining individual differences in affect, behaviour and cognition. In P. J. Corr & G. Matthews (Eds.), *The Cambridge handbook of personality psychology* (pp. 323–346). New York: Cambridge University Press.

Donnellan, M. B., & Robins, R. W. (2009). The development of personality across the lifespan. In P. J. Corr & G. Matthews (Eds.), *The Cambridge handbook of personality psychology* (pp. 191–204). New York: Cambridge University Press.

Dowling, D. K. (2012). Aging: Evolution of life span revisited. *Current Biology*, *22* (22), R947–R949.

Dumont, F. (2010). *A history of personality psychology: Theory, science, and research from Hellenism to the twenty-first century*. New York: Cambridge University Press.

Dunkel, C. S., Mathes, E., & Beaver, K. M. (2013). Life history theory and the general theory of crime: Life expectancy effects on low self-control and criminal intent. *Journal of Social, Evolutionary, and Cultural Psychology*, *7*, 12.

Ellis, B. J., Figueredo, A. J., Brumbach, B. H., & Schlomer, G. L. (2009). Fundamental dimensions of environmental risk: The impact of harsh versus unpredictable environments on the evolution and development of life history strategies. *Human Nature*, *20*, 204–268.

Ellis, L. (1987). Criminal behavior and r/k selection: An extension of gene-based evolutionary theory. *Deviant Behavior*, *8*, 149–176.

Ellis, L. (1988). Criminal behavior and r/K selection: An extension of gene-based evolutionary theory. *Personality and Individual Differences*, *9*, 697–708.

Ellis, B. J., & Essex, M. J. (2007). Family environments, adrenarche, and sexual maturation: A longitudinal test of a life history model. *Child Development*, *78*, 1799–1817.

Evans, P. D., Gilbert, S. L., Mekel-Bobrov, N., Vallender, E. J., Anderson, J. R., Vaez-Azizi, L. M., . . . Lahn, B. T. (2005). Microcephalin, a gene regulating brain size, continues to evolve adaptively in humans. *Science*, *309*, 1717–1720.

Farrell, J. A. (2012). *Attorney for the damned: Clarence Darrow in the Courtroom*. Chicago, IL: University of Chicago Press.

Fels, D., & Kaltz, O. (2006). Temperature-dependent transmission and latency of *Holospora undulata*, a micronucleus-specific parasite of the ciliate Paramecium caudatum. *Proceedings of the Royal Society of London B: Biological Sciences*, *273* (1589), 1031–1038.

Felsenstein, J. (1974). The evolutionary advantage of recombination. *Genetics*, *78*, 737–756.

Ferling, J. (2010). *John Adams: A life*. New York: Oxford University Press.

Figueredo, A. J., De Baca, T. C., & Woodley, M. A. (2013). The measurement of human life history strategy. *Personality and Individual Differences*, *55*, 251–255.

Figueredo, A. J., & Rushton, J. P. (2009). Evidence for shared genetic dominance between the general factor of personality, mental and physical health, and life history traits. *Twin Research and Human Genetics*, *12*, 555–563.

Figueredo, A. J., Vasquez, G., Brumbach, B. H., & Schneider, S. M. (2004). The heritability of life history strategy: The K-factor, covitality, and personality. *Biodemography and Social Biology*, *51*, 121–143.

Figueredo, A. J., Vásquez, G., Brumbach, B. H., & Schneider, S. M. (2007). The K-factor, covitality, and personality. *Human Nature*, *18*, 47–73.

Figueredo, A. J., Vásquez, G., Brumbach, B. H., Schneider, S. M. R., Sefcek, J. A., Tal, I. R. et al. (2006). Consilience and life history theory: From genes to brain to reproductive strategy. *Developmental Review*, *26*, 243–275.

Figueredo, A. J., Vasquez, G., Brumbach, B. H., Sefcek, J. A., Kirsner, B. R., & Jacobs, W. J. (2005). The K-factor: Individual differences in life history strategy. *Personality and Individual Differences*, *39*, 1349–1360.

Figueredo, A. J., Woodley, M. A., & Fernandes, H. B. (2014). Life history selection and phenotypic diversification. *Psychological Inquiry*, *25*, 325–329.

Figueredo, A. J., & Wolf, P. S. (2009). Assortative pairing and life history strategy. *Human Nature*, *20*, 317–330.

Fincher, C. L., & Thornhill, R. (2012). Parasite-stress promotes in-group assortative sociality: The cases of strong family ties and heightened religiosity. *Behavioral and Brain Sciences*, *35*, 61–79.

Fowler, W. M. (2011). *American crisis: George Washington and the dangerous two years after Yorktown*. New York: Walker and Company.

Franklin, B. (1916). *The autobiography of Benjamin Franklin*. New York: Garden City Publishing Company.

Frederick, S., Loewenstein, G., & O'Donoghue, T. (2002). Time discounting and time preference: A critical review. *Journal of Economic Literature*, *40*(2), 351–401.

Friedman, H. S. (2008). The multiple linkages of personality and disease. *Brain, Behavior, and Immunity*, *22*, 668–675.

Friedman, H. S., Tucker, J. S., Schwartz, J. E., Martin, L. R., Tomlinson-Keasey, C., Wingard, D. L., & Criqui, M. H. (1995). Childhood conscientiousness and longevity: Health behaviors and cause of death. *Journal of Personality and Social Psychology*, *68*, 696.

Friedman, H. S., Tucker, J. S., Tomlinson-Keasey, C., Schwartz, J. E., Wingard, D. L., & Criqui, M. H. (1993). Does childhood personality predict longevity?. *Journal of Personality and Social Psychology*, *65*, 176.

Galton, F. (1869). *Hereditary genius*. London: Macmillan and Company.

Geary, D. C. (2003). Sexual selection and human life history. *Advances in Child Development and Behavior*, *30*, 41–101.

Gibbons, J. W. (1987). Why do turtles live so long?. *BioScience*, *37*(4), 262–269.

Gill, C. O., & Reichel, M. P. (1989). Growth of the cold-tolerant pathogens Yersinia enterocolitica, Aeromonas hydrophila and Listeria monocytogenes on high-pH beef packaged under vacuum or carbon dioxide. *Food Microbiology*, *6*(4), 223–230.

Gladden, P. R., Sisco, M., & Figueredo, A. J. (2008). Sexual coercion and life-history strategy. *Evolution and Human Behavior*, *29*, 319–326.

Gladden, P., Welch, J., Figueredo, A., & Jacobs, W. (2009). Moral intuitions and religiosity as spuriously correlated life history traits. *Journal of Evolutionary Psychology*, *7*, 167–184.

Gogtay, N., Giedd, J. N., Lusk, L., Hayashi, K. M., Greenstein, D., Vaituzis, A. C., . . . Thompson, P. M. (2004). Dynamic mapping of human cortical development during childhood through early adulthood. *Proceedings of the National Academy of Sciences of the United States of America*, *101*, 8174–8179.

Goldstein, S., & Naglieri, J. A., (Eds.). (2013). *Handbook of executive functioning*. New York: Springer Science & Business Media.

Green, T. A., Schroeter, B., & Sancho, L. G. (2007). Plant life in Antarctica. In F. Pugnaire & F. Valladares (Eds.), *Functional plant ecology* (2nd edition, pp. 389–434). Boca Raton, Florida: CRC Press.

Greven, P. (1977). *The Protestant temperament: Patterns of child-rearing, religious experience, and the self in early America*. New York: Alfred A. Knopf.

Griskevicius, V., Delton, A. W., Robertson, T. E., & Tybur, J. M. (2011). Environmental contingency in life history strategies: The influence of mortality and socioeconomic status on reproductive timing. *Journal of Personality and Social Psychology*, *100*, 241.

Gross, M. R. (1996). Alternative reproductive strategies and tactics: Diversity within sexes. *Trends in Ecology & Evolution*, *11*(2), 92–98.

Gutiérrez, F., Gárriz, M., Peri, J. M., Ferraz, L., Sol, D., Navarro, J. B., Barbadilla, A., & Valdés, M. (2013). Fitness costs and benefits of personality disorder traits. *Evolution and Human Behavior 34*, 41–48.

Hagger-Johnson, G., Sabia, S., Nabi, H., Brunner, E., Kivimaki, M., Shipley, M., & Singh–Manoux, A. (2012). Low conscientiousness and risk of all-cause, cardiovascular and cancer mortality over 17 years: Whitehall II cohort study. *Journal of Psychosomatic Research*, 73, 98–103.

Hagger-Johnson, G. E., & Whiteman, M. C. (2007). Conscientiousness facets and health behaviors: A latent variable modeling approach. *Personality and Individual Differences*, *43*, 1235–1245.

Hambäck, P. A. (1998). Seasonality, optimal foraging, and prey coexistence. *The American Naturalist*, *152*(6), 881–895.

Hamilton, A., Jay, J., & Madison, J. (2011). *The federalist papers*. Auckland: The Floating Press.

Hamilton, W. D. (1964). The genetical evolution of social behaviour. *Journal of Theoretical Biology*, *7*, 1–16.

Harvey, P. H., Read, A. F., & Promislow, D. E. (1989). Life history variation in placental mammals: Unifying the data with theory. *Oxford Surveys in Evolutionary Biology*, *6*, 15–31.

Hawley, P. H. (2011). The role of competition and cooperation in shaping personality: An evolutionary perspective on social dominance, Machiavellianism, and children's social development. In D. M. Buss & P. H. Hawley (Eds.), *The evolution of personality and individual differences* (pp. 61–85). New York: Oxford University Press.

Herrnstein, R. J., & Murray, C. (1994). *Bell curve: Intelligence and class structure in American life*. New York: Free Press.

Hertler, S. C. (2014). The continuum of conscientiousness: Antagonistic interests among obsessive and antisocial personalities. *Polish Psychological Bulletin*, *45*, 52–63.

Hertler, S. C. (2015a). The evolutionary logic of the obsessive trait complex: Obsessive compulsive personality disorder as a complementary behavioral syndrome. *Psychological Thought*, *8*, 17–34.

Hertler, S. C. (2015b). Migration load, ecological opportunity, and obsessive compulsive personality disorder etiology: Obsessive character as an adaptation to seasonality. *Evolutionary Psychological Science*, *1*, 52–67.

Hertler, S. C. (2015c). Crossing the paradigmatic divide in personality: Coming to an evolutionary understanding of personality variation. *Journal for Philosophy and Psychiatry*. http://www.jfpp.org/116.html?&no_cache=1&sword_list%5B%5D=hertler

Hertler, S. C. (2016). The biology of obsessive-compulsive personality disorder symptomatology: Identifying an extremely *K*-selected life history variant. *Evolutionary Psychological Science*, *2*(1), 1–15.

Hewlett, B. S., Lamb, M. E., Leyendecker, B., & Schölmerich, A. (2000). Parental investment strategies among Aka foragers, Ngandu Farmers, and Euro-American urban-industrialists. In L. Cronk, N. Chagnon, & W. Irons (Eds.), *Adaptation and human behavior: An anthropological perspective* (pp. 155–178). Hawthorne, NY: Aldine De Gruyter.

Hill, K., & Hurtado, M. (1996/2011). *Ache life history: The ecology and demography of a foraging people*. New Brunswick, NJ: Transaction Publishers.

Hill, P. L., Turiano, N. A., Hurd, M. D., Mroczek, D. K., & Roberts, B. W. (2011). Conscientiousness and longevity: An examination of possible mediators. *Health Psychology*, *30*, 536.

Hofstadter, R. (1944/1992). *Social Darwinism in American thought*. Boston, MA: Beacon Press.

Horn, J., Nelson, C. E., & Brannick, M. T. (2004). Integrity, conscientiousness, and honesty. *Psychological Reports*, *95*(1), 27–38.

Houston, A. (2008). *Benjamin Franklin and the politics of improvement*. New Haven, CT: Yale University Press.

Howe, D. W. (1988). The impact of Puritanism on American culture. *Encyclopedia of the American Religious Experience*, *1*, 1–057. http://www.belmont-ma.gov/about-belmont; http://www.belmont-ma.gov/home/pages/history-facts

Hughes, M. (2015). Malthus: The life and legacies of an untimely Prophet, by Robert J. Mayhew. *The English Historical Review*, *130*(546), 1255–1256.

Huppert, G. (1998). *After the Black Death: A social history of early modern Europe*. Bloomington: Indiana University Press.

Idro, R., Kakooza-Mwesige, A., Asea, B., Ssebyala, K., Bangirana, P., Opoka, R. O., . . . Nalugya, J. (2016). Cerebral malaria is associated with long-term mental health disorders: A cross sectional survey of a long-term cohort. *Malaria Journal*, *15*(1), (1).

Ilies, R., & Judge, T. A. (2003). On the heritability of job satisfaction: The mediating role of personality. *Journal of Applied Psychology*, *88*, 750.

Jennerjahn, T. C., Ittekkot, V., Arz, H. W., Behling, H., Pätzold, J., & Wefer, G. (2004). Asynchronous terrestrial and marine signals of climate change during Heinrich events. *Science*, *306*(5705), 2236–2239.

Johan, M. G., Van Der Liden, D., Smillie, D., & Wilson, D. R. (1999). *The Darwinian heritage and sociobiology*. Westport, CT: Praeger Publishers.

Johnson, P. T., Rohr, J. R., Hoverman, J. T., Kellermanns, E., Bowerman, J., & Lunde, K. B. (2012). Living fast and dying of infection: Host life history drives interspecific variation in infection and disease risk. *Ecology Letters*, *15*(3), 235–242.

Johnson, T. C., Scholz, C. A., Talbot, M. R., & Kelts, K. (1996). Late Pleistocene desiccation of Lake Victoria and rapid evolution of cichlid fishes. *Science*, *273*, 1091.

Kaplan, H., Gurven, M., & Lancaster, J. B. (2007). Brain evolution and the human adaptive complex: An ecological and social theory. In: S. W. Gangestad & J. A. Simpson, (Eds). *The evolution of mind: Fundamental questions and controversies* (pp. 269–279). New York: Guilford Publications.

Kaplan, H., Hill, K., Lancaster, J., & Hurtado, A. M. (2000). A theory of human life history evolution: Diet, intelligence, and longevity. *Evolutionary Anthropology Issues News and Reviews*, *9*, 156–185.

Kaplan, H., Lancaster, J., & Robson, A. (2003). Embodied capital and the evolutionary economics of the human life span. *Population and Development Review*, *29*, 152–182.

Kaplan, H. S., & Gangestad, S. W. (2005). Life history theory and evolutionary psychology. In D. M. Buss (Ed.), *The handbook of evolutionary psychology* (pp. 68–95). Hoboken, NJ: John Wiley & Sons.

Kerner, H. J., & Kaiser, G. (1990). *Criminality: Personality, behavior, life history.* Berlin: Springer-Verlag.

Keuroghlian, A., & Passos, F. C. (2001). Prey foraging behavior, seasonality and time-budgets in black lion tamarins, Leontopithecus chrysopygus (Mikan 1823) (Mammalia, Callitrichidae). *Brazilian Journal of Biology*, *61*(3), 455–459.

Kirkwood, T. B., & Austad, S. N. (2000). Why do we age?. *Nature*, *408*, 233–238.

Kirkwood, T. B., & Holliday, R. (1979). The evolution of ageing and longevity. *Proceedings of the Royal Society of London B: Biological Sciences*, *205*, 531–546.

Krettenauer, T., Asendorpf, J. B., & Nunner-Winkler, G. (2013). Moral emotion attributions and personality traits as long-term predictors of antisocial conduct in early adulthood: Findings from a 20-year longitudinal study. *International Journal of Behavioral Development*, *37*, 192–201.

Kutzbach, J. E., & Otto-Bliesner, B. L. (1982). The sensitivity of the African-Asian monsoonal climate to orbital parameter changes for 9000 years BP in a low-resolution general circulation model. *Journal of the Atmospheric Sciences*, *39*(6), 1177–1188.

Landes, D. S. (1998). *The wealth and poverty of nations: Why some are so rich and some so poor.* New York: W. W. Norton & Company.

Laughlin, S. B., Van Steveninck, R. R. D. R., & Anderson, J. C. (1998). The metabolic cost of neural information. *Nature Neuroscience*, *1*, 36–41.

Leimar, O., Hammerstein, P., & Van Dooren, T. J. (2006). A new perspective on developmental plasticity and the principles of adaptive morph determination. *The American Naturalist*, *167*(3), 367–376.

Levy, D., Harrington, H. A., & Van Gorder, R. A. (2016). Role of seasonality on predator–prey–subsidy population dynamics. *Journal of Theoretical Biology*, *396*, 163–181.

Low, B. S. (1988). Pathogen stress and polygamy in humans. In I. L. Betzig, M. B. Mulder, & P. Turke (Eds.), *Human reproductive behavior: A Darwinian perspective* (pp. 115–127). New York: Cambridge University Press.

Low, B. S., Hazel, A., Parker, N., & Welch, K. B. (2008). Influences on women's reproductive lives unexpected ecological underpinnings. *Cross-Cultural Research*, *42*, 201–219.

MacArthur, R. H., & Wilson, E. O. (1967). *The theory of island biogeography.* Princeton, NJ: Princeton University Press.

MacDonald, K. (1997). Life history theory and human reproductive behavior. *Human Nature*, *8*, 327–359.

Maklakov, A. A., Fricke, C., & Arnqvist, G. (2007). Sexual selection affects life-span and aging in the seed beetle. *Aging Cell*, *6*(6), 739–744.

Malthus, T. R. (1878). *An essay on the principle of population: Or, a view of its past and present effects on human happiness, with an inquiry into our prospects respecting the future removal or mitigation of the evils which it occasions.* London: Reeves and Turner.

Marsh, W. M., & Kaufman, M. M. (2013). *Physical geography: Great systems and global environments.* New York: Cambridge University Press.

Martin, L. R., Friedman, H. S., & Schwartz, J. E. (2007). Personality and mortality risk across the life span: The importance of conscientiousness as a biopsychosocial attribute. *Health Psychology*, *26*, 428.

Martin, O. Y., & Hosken, D. J. (2003). Costs and benefits of evolving under experimentally enforced polyandry or monogamy. *Evolution*, *57*(12), 2765–2772.

Mbonye, M. K., Burnett, S. M., Naikoba, S., Ronald, A., Colebunders, R., Van Geertruyden, J. P., & Weaver, M. R. (2016). Effectiveness of educational outreach in infectious diseases management: A cluster randomized trial in Uganda. *BMC Public Health*, *16*(1), 714.

McCann, S. J. (2005). Longevity, big five personality factors, and health behaviors: Presidents from Washington to Nixon. *The Journal of Psychology*, *139*, 273–288.

Middlekauff, R. (1999). *The Mathers: Three generations of Puritan intellectuals, 1596–1728.* Berkeley: University of California Press.

Milano, K. W. (2008). *Remembering Kensington & Fishtown: Philadelphia's Riverward neighborhoods.* Charleston, SC: The History Press.

Milano, K. W. (2010). *Hidden history of Kensington & Fishtown.* Charleston, SC: The History Press.

Milewski, A. V., & Madden, D. (2006). Interactions between large African browsers and thorny Acacia on a wildlife ranch in Kenya. *African Journal of Ecology*, *44*(4), 515–522.

Møller, A. P., & Garamszegi, L. Z. (2012). Between individual variation in risk-taking behavior and its life history consequences. *Behavioral Ecology*, *23*, 843–853.

Montesquieu, C. L. D. S. (2009). *The spirit of the laws.* A. M. Cohler (Ed.) New York: Cambridge University Press.

Morgan, E. S. (1961). John Adams and the Puritan tradition: A review of diary and autobiography of John Adams by L. H. Butterfield. *The New England Quarterly*, *34*, 518–529.

Morgan, E. S. (2002). *Benjamin Franklin.* New Haven, CT: Yale University Press.

Morran, L. T., Schmidt, O. G., Gelarden, I. A., Parrish, R. C., & Lively, C. M. (2011). Running with the Red Queen: Host-parasite coevolution selects for biparental sex. *Science*, *333*, 216–218.

Muller, H. J. (1964). The relation of recombination to mutational advance. *Mutation Research/Fundamental and Molecular Mechanisms of Mutagenesis*, *1*, 2–9.

Murphy, K. R., & Lee, S. L. (1994). Personality variables related to integrity test scores: The role of conscientiousness. *Journal of Business and Psychology*, *8*, 413–424.

Murray, C. (2012). *Coming apart: The state of white America, 1960–2010*. New York: Crown Forum.

Murray, C. A. (2015). *By the people: Rebuilding liberty without permission*. New York: Crown Forum.

Nagel, P. C. (1999). *Descent from glory: Four generations of the John Adams family*. Cambridge, MA: Harvard University Press.

Nealis, V. G., Jones, R. E., & Wellington, W. G. (1984). Temperature and development in host-parasite relationships. *Oecologia*, *61*(2), 224–229.

Niemelä, P. T., Dingemanse, N. J., Alioravainen, N., Vainikka, A., & Kortet, R. (2013). Personality pace-of- life hypothesis: Testing genetic associations among personality and life history. *Behavioral Ecology*, *24*, 935–941.

Nowak, N. T., Weisfeld, G. E., Imamoğlu, O., Weisfeld, C. C., Butovskaya, M., & Shen, J. (2014). Attractiveness and spousal infidelity as predictors of infidelity in couples from five cultures. *Human Ethology Bulletin*, *29*, 18–38.

O'Cleirigh, C., Ironson, G., Weiss, A., & Costa, J. P. T. (2007). Conscientiousness predicts disease progression (CD4 number and viral load) in people living with HIV. *Health Psychology*, *26*, 473.

O'Connor, D. B., Conner, M., Jones, F., McMillan, B., & Ferguson, E. (2009). Exploring the benefits of conscientiousness: An investigation of the role of daily stressors and health behaviors. *Annals of Behavioral Medicine*, *37*, 184–196.

Odling-Smee, J., Erwin, D. H., Palkovacs, E. P., Feldman, M. W., & Laland, K. N. (2013). Niche construction theory: A practical guide for ecologists. *The Quarterly Review of Biology*, *88*(1), 3–28.

Olderbak, S. G., & Figueredo, A. J. (2010). Life history strategy as a longitudinal predictor of relationship satisfaction and dissolution. *Personality and Individual Differences*, *49*, 234–239.

Olson, L. C. (2004). *Benjamin Franklin's vision of American community: A study in rhetorical iconography*. Columbia, SC: University of South Carolina Press.

Padover, S. K. (1955/1989). *The Washington Papers: Basic selections from the public and private writings of George Washington*. Norwalk, CT: The Easton Press.

Partridge, L., & Fowler, K. (1992). Direct and correlated responses to selection on age at reproduction in *Drosophila melanogaster*. *Evolution*, *46*, 76–91.

Paul, M. (2012). Seasonality in infectious diseases: Does it exist for all pathogens?. *Clinical Microbiology and Infection*, *18*(10), 925–926.

Penke, L. (2010). Bridging the gap between modern evolutionary psychology and the study of individual differences. In D. Buss & P. Hawley (Eds.), *The evolution of personality and individual differences* (pp. 243–279). New York: Oxford University Press.

Pfennig, D. W., & Pfennig, K. S. (2012). *Evolution's wedge: Competition and the origins of diversity*. Berkeley, CA: University of California Press.

Philipp, E. E., & Abele, D. (2009). Masters of longevity: Lessons from long-lived bivalves—a mini-review. *Gerontology*, *56*, 55–65.

Pike-Tay, A., & Cosgrove, R. (2002). From reindeer to wallaby: Recovering patterns of seasonality, mobility, and prey selection in the Palaeolithic Old World. *Journal of Archaeological Method and Theory*, *9*(2), 101–146.

Pol, H. E. H., Schnack, H. G., Posthuma, D., Mandl, R. C., Baaré, W. F., Van Oel, C., . . . Kahn, R. S. (2006). Genetic contributions to human brain morphology and intelligence. *The Journal of Neuroscience*, *26*, 10235–10242.

Promislow, D. E., & Harvey, P. H. (1990). Living fast and dying young: A comparative analysis of lifehistory variation among mammals. *Journal of Zoology*, *220*, 417–437.

Quinlan, R. J. (2007). Human parental effort and environmental risk. *Proceedings of the Royal Society B: Biological Sciences*, *274*, 121–125.

Raath, M. A. (1990). Morphological variation in small theropods and its meaning in systematics: Evidence from Syntarsus rhodesiensis. In: Carpenter, K. & Currie, P. J. (Eds.), *Dinosaur systematics: Approaches and perspectives* (pp. 91–105). Cambridge: Cambridge University Press.

Rauser, C. L., Mueller, L. D., Travisano, M., & Rose, M. R. (2009). Evolution of aging and late life. In T. Garland & M. R. Rose (Eds.), *Experimental evolution: Concepts, methods, and applications of selection experiments* (pp. 551–584). Berkley and Los Angeles, California: California University Press.

Réale, D., Garant, D., Humphries, M. M., Bergeron, P., Careau, V., & Montiglio, P. O. (2010). Personality and the emergence of the pace-of-life syndrome concept at the population level. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *365*, 4051–4063.

Rentfrow, P. J. (2014). *Geographical psychology: Exploring the interaction of environment and behavior*. Washington, DC: Psychology Press.

Roberts, B. W., Chernyshenko, O. S., Stark, S., & Goldberg, L. R. (2005). The structure of conscientiousness: An empirical investigation based on seven major personality questionnaires. *Personnel Psychology*, *58*, 103–139.

Roberts, B. W., Smith, J., Jackson, J. J., & Edmonds, G. (2009). Compensatory conscientiousness and health in older couples. *Psychological Science*, *20*, 553–559.

Rose, M. R. (1984). Laboratory evolution of postponed senescence in *Drosophila melanogaster*. *Evolution*, *38*, 1004–1010.

Rothbart, M. K., Sheese, B. E., & Conradt, E. D. (2009). Childhood temperament. In P. J. Corr & G. Matthews (Eds.), *The Cambridge handbook of personality psychology* (pp. 177–190). New York: Cambridge University Press.

Rubincam, D. P. (1995). Has climate changed the Earth's tilt?. *Paleoceanography*, *10*(3), 365–372.

Runyan, W. M. (1984). *Life histories and psychobiography: Explorations in theory and method*. New York: Oxford University Press.

Rushton, J. P. (1985). Differential K theory: The sociobiology of individual and group differences. *Personality & Individual Differences*, *6*, 441–452.

Rushton, J. P. (1987). An evolutionary theory of health, longevity, and personality: Sociobiology and r/K reproductive strategies. *Psychological Reports*, *60*, 539–549.

Rushton, J. P. (1990). Sir Francis Galton, epigenetic rules, genetic similarity theory, and human life history analysis. *Journal of Personality*, *58*, 117–140.

Rushton, J. P. (1995). *Race, evolution, and behavior: A life history perspective*. New Brunswick, NJ: Transaction Publishers.

Rushton, J. P. (1999). Darwin's really dangerous idea-The primacy of variation. In M. G. Johan, D. V. D. D. Smillie, & D. R. Wilson (Eds.), *The Darwinian heritage and sociobiology* (pp. 209–229). Westport, CT: Praeger Publishers.

Rushton, J. P. (2000). *Race, evolution, and behavior: A life history perspective* (3rd edn.). Port Huron, MI: Charles Darwin Research Institute.

Rushton, J. P. (2004). Placing intelligence into an evolutionary framework or how g fits into the r-K matrix of life history traits including longevity. *Intelligence*, *32*, 321–328.

Rushton, J. P., & Ankney, C. D. (1996). Brain size and cognitive ability: Correlations with age, sex, social class, and race. *Psychonomic Bulletin & Review*, *3*, 21–36.

Rushton, J. P., Bons, T. A., & Hur, Y. M. (2008). The genetics and evolution of the general factor of personality. *Journal of Research in Personality*, *42*, 1173–1185.

Rushton, J. P., Russell, R. J., & Wells, P. A. (1984). Genetic similarity theory: Beyond kin selection. *Behavior Genetics*, *14*, 179–193.

Rymarz, R., & Belmonte, A. (2014). Some life history narratives of religious education coordinators in Catholic schools. *International Studies in Catholic Education*, *6*, 191–200.

Salter, F. (2012). The war against human nature in the social sciences. *Quadrant*, *56*, 49.

Schechter, D. E., & Francis, C. M. (2010). A life history approach to understanding youth time preference: Mechanisms of environmental risk and uncertainty and attitudes toward risk behavior and education. *Human Nature*, *21*, 140–164.

Schwartz, C. R., & Mare, R. D. (2005). Trends in educational assortative marriage from 1940 to 2003. *Demography*, *42*, 621–646.

Shackleton, N. J. (2000). The 100,000-year ice-age cycle identified and found to lag temperature, carbon dioxide, and orbital eccentricity. *Science*, *289*(5486), 1897–1902.

Sharief, A. H., Khalil, E. A. G., & Omer, S. A. (2011). Pregnancy-associated malaria in Sudan: Prevalence and possible risk factors. *The Open Tropical Medicine Journal*, *4*, 6–10.

Shaw, P. (1976). *The character of John Adams*. Chapel Hill: University of North Carolina Press.

Sherman, R. A., Figueredo, A. J., & Funder, D. C. (2013). The behavioral correlates of overall and distinctive life history strategy. *Journal of Personality and Social Psychology*, *105*, 873–888.

Sherrat, T. N. & Wilkinson, D. M. (2009). *Big questions in ecology and evolution*. New York: Oxford University Press.

Shipler, D. K. (2005). Monkey see, monkey do: If pols ignore poverty, the press does, too. *Columbia Journalism Review*, *44*(4), 11–13.

Siaputra, I. B. (2013). The 4PA of plagiarism: A psycho-academic profile of plagiarists. *International Journal for Educational Integrity*, *9*, 2.

Smith, J. M., & Maynard-Smith, J. (1978). *The evolution of sex*. Cambridge: Cambridge University Press.

Smyth, C. (1931). *Builders of America volume XIII: John Adams: The man who was called "father of American independence"*. New York: Funk & Wagnalls Company.

Snow, C. P. (1993). *The two cultures*. New York: Cambridge University Press (Canto).

Snow, R. W., Trape, J. F., & Marsh, K. (2001). The past, present and future of childhood malaria mortality in Africa. *Trends in Parasitology*, *17*, 593–597.

South, S. C., & Krueger, R. F. (2014). Genetic strategies for probing conscientiousness and its relationship to aging. *Developmental Psychology*, *50*, 1362.

Speakman, J. R., & Selman, C. (2011). The free-radical damage theory: Accumulating evidence against a simple link of oxidative stress to ageing and lifespan. *Bioessays*, *33*, 255–259.

Stearns, S. C. (1983). The influence of size and phylogeny on patterns of covariation among life-history traits in the mammals. *Oikos*, *41*, 173–187.

Stearns, S., Ackermann, M., & Doebeli, M. (1998). The experimental evolution of aging in fruitflies. *Experimental Gerontology*, *33*(7), 785–792.

Stearns, S. C. (1992). *The evolution of life histories*. New York: Oxford University Press.

Stearns, S. C., Ackermann, M., Doebeli, M., & Kaiser, M. (2000). Experimental evolution of aging, growth, and reproduction in fruitflies. *Proceedings of the National Academy of Sciences*, *97*(7), 3309–3313.

Stearns, S. C., & Koella, J. C. (1986, September). The evolution of phenotypic plasticity in life-history traits: Predictions of reaction norms for age and size at maturity. *Evolution*, *40*(5), 893–913.

Stivala, J. (2015). Malaria and miscarriage in ancient Rome1. *Canadian Bulletin of Medical History/Bulletin*, *32*(1), 143–161.

Stouffer, R. J., Yin, J., Gregory, J. M., Dixon, K. W., Spelman, M. J., Hurlin, W., . . . Hu, A. (2006). Investigating the causes of the response of the thermohaline circulation to past and future climate changes. *Journal of Climate*, *19*(8), 1365–1387.

Suchy, Y. (2009). Executive functioning: Overview, assessment, and research issues for non- neuropsychologists. *Annals of Behavioral Medicine*, *37*, 106–116.

Sussman, R., Zimmer, C., & Obrist, H. U. (2014). *The oldest living things in the world*. Chicago, IL: University of Chicago Press.

Taber, B. J. (2013). Time perspective and career decision-making difficulties in adults. *Journal of Career Assessment*, *21*, 200–209.

Terracciano, A., Löckenhoff, C. E., Zonderman, A. B., Ferrucci, L., & Costa Jr., P. T. (2008). Personality predictors of longevity: Activity, emotional stability, and conscientiousness. *Psychosomatic Medicine*, *70*(6), 621.

Thiessen, D., & Gregg, B. (1980). Human assortative mating and genetic equilibrium: An evolutionary perspective. *Ethology and Sociobiology*, *1*(2), 111–140.

Thompson, C. B. (1998). *John Adams and the spirit of liberty*. Lawrence: University Press of Kansas.

Thornhill, R., & Gangestad, S. W. (2008). *The evolutionary biology of human female sexuality*. New York: Oxford University Press.

Thornhill, R., & Palmer, C. T. (2004). Evolutionary life history perspective on rape. In: Crawford, C. & Salmon, C. (Eds.), *Evolutionary Psychology, Public Policy, and Personal Decisions* (pp. 249–274). Mahwah, NJ: Lawrence Erlbaum Associates.

Tocqueville, A. D. (1945). *Democracy in America. 2 vols*. New York: Vintage.

Trauth, M. H., Alonso, R. A., Haselton, K. R., Hermanns, R. L., & Strecker, M. R. (2000). Climate change and mass movements in the NW Argentine Andes. *Earth and Planetary Science Letters*, *179*(2), 243–256.

Travis, J. (2009). Phenotypic plasticity. In S. A. Levin (Ed.), *The Princeton guide to ecology* (pp. 65–71). Princeton, NJ: Princeton University Press.

Trivers, R. (2005). Reciprocal altruism: 30 years later. In van Schaik, C. P., & Kappeler, P. M. (Eds.), *Cooperation in primates and humans: Mechanisms and evolution* (pp. 67–83). Berlin: Springer-Verlag.

Trivers, R. L. (1971). The evolution of reciprocal altruism. *The Quarterly Review of Biology*, *46*(1), 35–57.

Upadhyay, R. K., & Iyengar, S. R. K. (2005). Effect of seasonality on the dynamics of 2 and 3 species prey–predator systems. *Nonlinear Analysis: Real World Applications*, *6*(3), 509–530.

Uzoh, C. V., Iheukwumere, I. H., & Onyewenjo, S. C. (2015). Prevalence of malaria among registered pregnant women attending ante natal centre at Federal Medical Centre Yenagoa, South South Nigeria. *International Journal*, *3*(12), 933–938.

van der Linden, D., Dunkel, C. S., Beaver, K. M., & Louwen, M. (2015). The unusual suspect: The General Factor of Personality (GFP), life history theory, and delinquent behavior. *Evolutionary Behavioral Sciences*, *9*(3), 145.

van der Linden, D., Te Nijenhuis, J., & Bakker, A. B. (2010). The general factor of personality: A meta-analysis of Big Five intercorrelations and a criterion-related validity study. *Journal of Research in Personality*, *44*, 315–327.

Van Schaik, C. P., & Isler, K. (2012). Life history evolution in primates. In J. C. Mitani, J. Call, P. M. Kappeler, R. A. Palombit, & J. B. Silk (Eds.), *the evolution of primate societies* (pp. 220–244). Chicago, IL: Chicago University Press.

Viinikainen, J., Kokko, K., Pulkkinen, L., & Pehkonen, J. (2010). Personality and labour market income: Evidence from longitudinal data. *Labour*, *24*, 201–220.

Wade, N. (2006). *Before the Dawn: Recovering the Lost History of Our Ancestors.* New York: Penguin.

Walker, R. S., & Hamilton, M. J. (2008). Life-history consequences of density dependence and the evolution of human body size. *Current Anthropology*, *49*, 115–122.

Walsh, M. R., & Reznick, D. N. (2011). Experimentally induced life-history evolution in a killifish in response to the introduction of guppies. *Evolution*, *65*(4), 1021–1036.

Weiss, A., & Costa, J. P. T. (2005). Domain and facet personality predictors of all-cause mortality among Medicare patients aged 65 to 100. *Psychosomatic Medicine*, *67*, 724–733.

Weizmann, F., Wiener, N. I., Wiesenthal, D. L., & Ziegler, M. (1990). Differential K theory and racial hierarchies. *Canadian Psychology/Psychologie Canadienne*, *31*, 1.

Wenner, C. J., Bianchi, J., Figueredo, A. J., Rushton, J. P., & Jacobs, W. J. (2013). Life history theory and social deviance: The mediating role of executive function. *Intelligence*, *41*, 102–113.

Wertheim, H. F. L., Horby, P., & Woodall, J. P. (2012). *Atlas of human infectious diseases.* Hoboken, NJ: Wiley-Blackwell.

Widiger, T. A., & Lynam, D. R. (1998). Psychopathy and the five-factor model of personality. In: Millon, T., Simonsen, E., Birket-Smith, M., & Davis, R. D. (Eds.), *Psychopathy: Antisocial, criminal, and violent behaviors* (pp. 171–187). New York: Guilford.

Wiese, R. J., & Willis, K. (2004). Calculation of longevity and life expectancy in captive elephants. *Zoo Biology*, *23*, 365–373.

Wilkinson, G. S., & South, J. M. (2002). Life history, ecology and longevity in bats. *Aging Cell*, *1*, 124–131.

Williams, G. C. (1966). Natural selection, the costs of reproduction, and a refinement of lack's principle. *American Naturalist*, *10*, 687–690.

Williams, G. C. (2008). *Adaptation and natural selection: A critique of some current evolutionary thought.* Princeton, NJ: Princeton University Press.

Wilson, M., & Daly, M. (1997). Life expectancy, economic inequality, homicide, and reproductive timing in Chicago neighbourhoods. *BMJ: British Medical Journal*, *314*, 1271.

Wilson, R. S., De Leon, C. F. M., Bienias, J. L., Evans, D. A., & Bennett, D. A. (2004). Personality and mortality in old age. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *59*, P110–P116.

Winegard, B., & Winegard, B. (2012). Round up the usual suspects: A review of Charles Murray, coming apart: The state of white America, 1960–2010. *Evolutionary Psychology*, *10*, 198–209.

Witelson, S. F., Beresh, H., & Kigar, D. L. (2006). Intelligence and brain size in 100 postmortem brains: Sex, lateralization and age factors. *Brain*, *129*, 386–398.

Wolf, P. S., & Figueredo, A. J. (2011). Fecundity, offspring longevity, and assortative mating: Parametric tradeoffs in sexual and life history strategy. *Biodemography and Social Biology*, *57*, 171–183.

Young, A. M., Hobson, E. A., Lackey, L. B., & Wright, T. F. (2012). Survival on the ark: Life-history trends in captive parrots. *Animal Conservation*, *15*, 28–43.

Ziff, L. (1973). *Puritanism in America: New culture in a New World*. New York: Viking Press.

Zwaan, B., Bijlsma, R., & Hoekstra, R. E. (1995). Direct selection on life-span in *Drosophila melanogaster*. *Evolution*, *49*, 649–659.

# INDEX

S.C. Hertler, *Life History Evolution and Sociology*,
DOI 10.1007/978-3-319-48784-7