

Original Article

**REPRODUCTIVE STRATEGY AND ETHNIC CONFLICT:
SLOW LIFE HISTORY AS A PROTECTIVE FACTOR
AGAINST NEGATIVE ETHNOCENTRISM IN TWO
CONTEMPORARY SOCIETIES**

Aurelio José Figueredo

Department of Psychology, University of Arizona

Dok J. Andrzejczak

Department of Psychology, University of Arizona

Daniel Nelson Jones

Department of Psychology, University of British Columbia

Vanessa Smith-Castro

Instituto de Investigaciones Psicológicas, Universidad de Costa Rica

Eiliana Montero

Instituto de Investigaciones Psicológicas, Universidad de Costa Rica

Abstract

Much previous theory and evidence in both social and evolutionary psychology has been equivocal and inconsistent regarding whether in-group altruism should predict out-group hostility, and whether this effect should be positive or negative in direction. A “slow” Life History (LH) strategy emphasizes both kin-selected altruism and reciprocal altruism as means of investing heavily in offspring, blood relatives, and mutualistic social relationships with both kith and kin. We therefore investigated whether a slow LH strategy, as a measurable individual-difference variable favoring in-group altruism (positive ethnocentrism), should predict out-group hostility (negative ethnocentrism), and what the direction of the hypothesized effect would be. We found that a multivariate latent variable representing slow LH strategy served as a protective factor against a latent variable representing Negative Ethnocentrism. These results were replicated in the United States of America and in the Republic of Costa Rica using Multisample Structural Equation Model with cross-sample equality constraints.

Keywords: Negative ethnocentrism, life history strategy, emotional intelligence, in-group altruism, out-group hostility

AUTHOR NOTE: Please direct correspondence to: Aurelio José Figueredo, Department of Psychology, The University of Arizona, P.O. Box 210069, Tucson, AZ 85721. Email: ajf@u.arizona.edu

Introduction

Negative ethnocentrism remains a major source of social conflict in the twenty-first century. Age-old ethnic rivalries continue to plague to modern world, including persistent and seemingly intractable conflicts in the Indian Subcontinent, Rwanda, the former Soviet Union, the former Yugoslavia, Palestine, and most recently in the Sudan and in Iraq. For many years, much scientific research has been directed to finding the causes of negative ethnocentrism, most notably within the field of social psychology. Generally speaking, social psychology has sought the roots of ethnic conflict in *intra-psychic* or internal and subjective factors. For example, Social Identity Theory (Tajfel & Turner, 1979) posits that individuals choose to affiliate with social groups primarily because such affiliation serves to enhance self-esteem, which is seen as the ultimate motivating force behind a great deal of human behavior within social psychology.

In contrast, the field of evolutionary psychology often presents preference for one's own group as a natural extension of kin-selected altruism (Wilson, 1976; Salter, 2003; Rushton, 2005), where individuals are expected to discriminate in favor of genetic relatives in the allocation of socially exchanged benefits and consequently against others that are not as closely related. Because kin-selection is a form of natural selection, this theory posits the roots of ethnic conflict in *extra-psychic* or external and objective factors. The argument is that members of the same ethnic group are likely to be more closely genetically related with each other than they are with members of other ethnic groups. Therefore, favoritism towards genetic kin gradually blends into favoritism towards co-ethnics, essentially treating them merely as somewhat more distant kin. For example, Genetic Similarity Theory (Rushton, 1989) posits that kin-selected altruism and ethnic nepotism are ultimately due to the same ultimate and proximate causes, which is the possession of shared genes and the mutual recognition thereof based on both physical and behavioral cues. Whitmeyer (1997) has further proposed a mathematical argument in favor of the proposition that endogamy, which is the assortative mating of genetically similar individuals, is the "fundamental cause" underlying ethnocentric behavior.

These are two extremely different theories, but it is not clear whether they are in fact mutually contradictory or instead merely describe two different aspects of the same phenomenon. Indeed, some evolutionary psychologists (e.g., MacDonald, 1994, 1998) have proposed that many of the processes identified by social psychology, notably those of Social Identity Theory, serve as proximate mechanisms for the ultimate evolutionary function of the survival and reproduction of genetically discriminable ethnic groups. If that is so, then there need not be a logically necessary contradiction between these two seemingly opposing viewpoints. In fact, there appear to be substantial bodies of evidence supporting both of them. On the other hand, it is really not known whether this is the case because these alternative hypotheses are difficult to pit against each other in the same empirical study, as would be the recommended scientific methodology (Chamberlin, 1897; Platt, 1964). Nevertheless, the principle of Consilience (Wilson, 1998) would demand that we somehow integrate these two bodies of knowledge into a mutually interconnected and consistent whole.

Fortunately, there is yet another mid-level evolutionary theory which holds forth the promise of doing just that. Recent theoretical and empirical work on Life History (LH) Theory has shown that there is substantial individual variation in human life history strategy within groups (Figueredo et al., 2006). This means that we need not rely

exclusively on large-scale societal-level phenomena to test these theories. Patterns of systematic individual variation might help explain variation *within* these societies as well. Several individual difference variables predicting negative ethnocentrism have emerged in the social psychology literature (e.g., Devine, Plant, & Amodio, 2002; Prato & Sidaneous, 1994). However, recent theorists have argued that these individual differences reflect nothing more than intergroup and intragroup processes. More specifically Kreindler (2005) argues that without the dynamics of social groups, these individual difference variables could not exist.

We extend this argument even further, suggesting that humans have evolved within a social ecology where prosocial behavior often outcompeted antisocial behavior. Many traits that humans possess are the result of *social selection*, and represent adaptations to our social environment and to living and breeding while embedded within social groups (West-Eberhard, 1979; Nesse, 2007). The influence that our evolved social adaptations might exert on contemporary ethnocentrism has been virtually ignored in the realm of research on ethnic conflict (for one notable exception, see Park, Faulker, & Schaller, 2003). The present paper will articulate how LH theory can inform ethnocentrism research on because of two synergistic properties innate in slow life history strategies: enhanced cognitive functioning and increased adherence to social norms.

Life History Strategy

Research has indicated that individuals vary quite a bit in the attachment that they display towards their parents (e.g., Bowlby, 1991) and family, the security of their developmental environment (Ellis, Figueredo, Brumbach, & Schlomer, 2009), the investment and attention that they exchange with parents, friends, and relatives (Figueredo et al., 2004, 2005, 2006, 2007), and the social and sexual relationships that they are likely to forge during development based on interpersonal skills (Rowe, Vazsonyi, & Figueredo, 1997). These individual differences are not merely random and meaningless variations, but rather underscore a pattern of characteristics that enable an individual to survive and reproduce based on the environmental challenges that they face currently, and that their ancestors have faced in the past. The culmination of such evolutionary forces and the suite of evolved characteristics selected are summarized by the concept of Life History (LH) strategy. A wide array of individual difference traits are related in the cohesive and coordinated LH strategy of an individual, rather than existing as randomly fluctuating attributes which are merely present in different amounts across people (Figueredo et al., 2004, 2005, 2006, 2007).

Research examining LH strategies has found that individuals generally vary along a continuum. On one end, some individuals are highly social, invest heavily in their offspring, take few unnecessary risks, are physically and mentally healthier, invest more in a community, are securely attached, form long-term pair bonds, are more sexually restricted, go through a longer delay of sexual development, and are less impulsive. Such individuals are considered having a *slow* LH strategy. On the other end of the continuum are individuals that are less social and more individualistic, invest less in their offspring, are heavy risk-takers, are less physically and mentally robust, invest less in their community, are insecurely attached, form fewer long-term pair bonds, are less sexually restricted, undergo more rapid sexual development, and are highly impulsive. Such individuals are considered as having a *fast* LH strategy.

As a result of LH strategy differences, some individuals may have a disposition which is different towards in-groups and out-groups, as well as different feelings and attitudes towards themselves and towards other people in general. For example, a warm disposition towards others (particularly the in-group) is likely to be formed for slow LH strategy individuals. This warm disposition might stem from the nurturance and investment such individuals receive early in life. These individuals learn that the world is a safe and inviting place that can safely be explored. In contrast, individuals deprived of such warmth (i.e., received little parental investment while growing up) would perceive the world and its inhabitants as a harsh place that is full of instability and danger.

Naturally, an individual who was raised in a loving, high-investment, and community-centered environment would feel deeper attachment to, and love for, their perceived in-group. More importantly, however, such securely attached and communal individuals will be open to the idea of interacting with strangers and out-group members. This desire to interact would stem from personality differences and reciprocation dispositions inherent in slow LH strategy individuals. Indeed, previous research has shown that personality (e.g., Hodson, Hogg, & MacInnis, 2009), communal disposition (Bartz & Lindon, 2004), and secure attachment (e.g., Baldwin et al., 1993; Mikulincer & Shaver, 2001) all lead to reduced negative ethnocentrism.

Individuals who had a fairly difficult childhood, received less investment from parents and other relatives, and were not part of a cohesive community may feel more negativity towards others in general. This tends to develop into a more *antagonistic* approach towards their social world, and perceive most other people as a potential threat. Recall that Bowlby (1969) related attachment styles with *internal working models* of self-other relationships, which have been extended to generalized sexual and social relationships, and not just parent-child bonds (e.g., Petromonaco & Feldman-Barret, 2000). Recently, researchers (e.g., Tremblay & Dozois, 2009) described entire *early maladaptive schemas* that seem to reflect these different internal working models and are evidently influenced by the many of the same proposed developmental factors. Belsky, Steinberg, and Draper (1991) associated *insecure* attachment with a *mistrustful* internal working model and an *opportunistic* interpersonal orientation and associated *secure* attachment with a *trusting* internal working model and a *reciprocally-rewarding* interpersonal orientation. Ross and Hill (2002) have also associated insecure childhood attachment and a mistrustful internal working model to an *unpredictability schema* which they define as “a pervasive belief that people are unpredictable and the world is chaotic” (p. 458). They further associate the unpredictability schema to an external locus of control, helplessness, causal uncertainty, decreased interpersonal trust, decreased sense of coherence, decreased future orientation, and decreased delay of gratification, as well as increased impulsivity, increased sensation-seeking, and increased risk-taking behaviors, such early sexual activity, risky sexual behavior, adolescent pregnancy and childbearing. These correlates closely resemble those identified for fast LH strategy in humans (Figueredo et al., 2004, 2005, 2006, 2007)

LH theory does not regard these *social schemata*, if they may be called that, as particularly “maladaptive”, but instead as contingently adaptive in different environments. Specifically, such schemata might be adaptive in the various environments where LH strategies evolve and develop. LH strategies are associated with different attachment styles, with slow LH strategists having secure attachment styles and fast LH strategies having any of several insecure attachment styles (e.g., *anxious* or *avoidant*).

For example, Malamuth's (1996) *Confluence Model* describes a generalized disposition towards rape as being influenced by multiple specific pathways (roughly representing promiscuity and hostility), ultimately driven by a generalized disposition towards relationships with members of the opposite sex. Malamuth suggests two sexual strategies at opposite ends of a continuum: (1) a *convergent interest* sexual strategy; and (2) a *divergent interest* sexual strategy. Specifically, males following the convergent interest strategy conceive of their reproductive interests and those of the female as mutually consistent, or *mutualistic*, and base their intersexual relationships on this perceived commonality of interests. In contrast, males following the divergent interest strategy see their reproductive interests and those of the female as mutually inconsistent, or *antagonistic*, and base their intersexual relationships on this perceived conflict of interests.

Although Malamuth (1998) uses different terminology, he suggests that the selection of these strategies during development might be biased by different life history (LH) strategies: slow LH strategists are more prone to adopt convergent interest (mutualistic) sexual strategies and fast LH strategists are more prone to adopt divergent (antagonistic) sexual interest strategies. This is evidently because convergent interest (mutualistic) strategies are more consistent with long-term sexual relationships and cooperative biparental care whereas divergent interest (antagonistic) strategies are clearly inconsistent with these long-term reproductive tactics.

Figueredo & Jacobs (2010) have extended this model beyond the sexual and into the general social domain, suggesting that slow LH strategists are more prone to adopt otherwise equivalent convergent interest *social* strategies and that fast LH strategists are more prone to adopt otherwise equivalent divergent interest *social* strategies. Malamuth had suggested previously, although cautiously, that a generalized competitive or cooperative disposition might exist, but did not develop this idea much further. Slow LH strategists are more likely to engage in reciprocally altruistic relationships with both kin and non-kin, as well as with both romantic (not just sexual) partners and with their offspring. Slow LH strategists clearly prefer long-term and cooperative *social* as well as *sexual* relationships, which are evidently easier and more profitable to maintain in their characteristically more stable, predictable, and controllable environments (Ellis, Figueredo, Brumbach, & Schlomer, 2009)

In sum, LH theory predicts that "slow LH strategists", meaning individuals who are securely attached, social, communal, and with personality dispositions that would lead to greater reciprocal engagement and social behavior (e.g., strategy individuals), are likely to perceive out-group members as more potentially cooperative and less threatening than "fast LH strategists". We now review two important components to slow LH strategy that combine in synergistic way to both enable and motivate slow LH strategy individuals to be less negatively ethnocentric.

Mental abilities and Life History Strategy

One critical component of life history strategy is the mental functions that are intrinsically tied long-term vs. short-term orientations. Individuals who are short-term often lack the emotional impulse control and behavioral self-regulation necessary to engage in long-term strategies. One important set of such abilities is referred to collectively as *Emotional Intelligence* (EI; Salovey, Hsee, & Mayer, 1993; Petrides & Furnham, 2001, 2003, 2006). EI is defined as the ability, capacity, or skill to identify,

assess, and manage the emotions of oneself and of others. EI is a set of cognitive and affective abilities that enable individuals to function in a desirable manner both *intra*-personally and *inter*-personally. Characteristics of EI include positive feelings towards one's self, concern or empathy for others, control of one's anger, and time-management skills for carrying out one's social responsibilities.

In ecologies that required immediate behavioral responses to environmental stimuli, deliberative thought processes or muted emotional responses may have been detrimental to survival. Unstable environments, which provide inconsistent, unreliable, or invalid cues to optimal behavior, should selectively favor individuals who are relatively inflexible in developmental time (West-Eberhard, 2003; Figueredo, Hammond, & McKiernan, 2006). In contrast, more stable environments that have reliable and valid cues available on which to base adaptive behavioral contingencies may instead select for individuals high in behavioral flexibility. Emotional and behavioral self-regulation may thus confer an advantage in adaptation to a stable environment.

Because slow LH strategists characteristically evolve and develop in stable, predictable, and controllable environments (Ellis, Figueredo, Brumbach, & Schlomer, 2009), and depend upon the many long-term cooperative and mutualistic social bonds they form within those environments, engaging in appropriate social behavior is absolutely essential to their survival and reproduction. Saying or doing the wrong thing at the wrong time can be disastrous for slow LH strategists. Likewise, an inability to react viscerally and immediately to an unexpected and dangerous situation can be maladaptive in the unstable, unpredictable, and uncontrollable environments in which fast LH strategists characteristically evolve and develop. Therefore, emotional intelligence and behavioral self-regulation present a fitness trade-off in that they can be beneficial under certain conditions and costly in others.

In 1989, Patricia Devine published a hallmark article articulating how negative ethnocentrism may, in fact, be an innate response by most people. Those who are less ethnocentric possess both the behavioral disposition and the capacity to inhibit or override their prejudicial responses to out-group members. In this view, a combination of a *behavioral preferences* (perhaps ultimately based on fast or slow life history strategies) and a set of *mental abilities* (associated with self-control or lack thereof) adaptively modulate the development of antagonistic social behaviors.

Emotional intelligence and the ability to override instinctive impulses, in the service of longer-term goals, is one of the defining features of individuals who pursue slow LH strategies. Such individuals are able to override more basic reactions in favor of more cognitive, thought-out, and deliberate responses to their environment. Therefore, individuals pursuing slow LH strategies should evolve and develop the mental abilities required to inhibit prejudicial responses.

Slow LH Strategy doesn't only predict the capacity for long-term thought and consideration. Individuals pursuing slow LH strategies, by definition, are more tuned into social cues and norms. As a result, slow LH strategy individuals are more likely to internalize and adhere to the social norms of their environment.

Devine (1989) has articulated, and others have subsequently shown (e.g., Amodio, Harmon-Jones, & Devine, 2003), that mental abilities (such as emotional intelligence) are critical to avoiding prejudice and negatively ethnocentric behavior. However, it is only one part of a two-part package. One must also have the *motivation* to avoid prejudice. In particular, such motivation for individuals stems from social norms.

Social Norm Adherence and Life History Strategy

High emotional intelligence and the ability to override socially undesirable responses are critical in avoiding negative ethnocentrism; however, individuals must not only be *able* but also *willing* to adhere to the social norms of a given group. If an individual was socialized from birth to be negatively ethnocentric, or to hate a certain group, that individual will probably be prejudiced because the desire or motivation to over-ride already existing negative ethnocentrism processes will be absent. Thus, the ability *and* the motivation to avoid negatively ethnocentric responses will most likely result in egalitarian attitudes and behaviors.

Given the prevailing social norm of the mainstream western world is that it is socially undesirable to be negatively ethnocentric, and most people feel either internal or external pressure to avoid being prejudiced (e.g., Devine et al., 2002). It is entirely likely, however, that an individual may possess the ability to plan for the future, take social norms into account, and still ignore them.

Consider the examples of certain racist organizations. Such organizations come in two forms: Militant and overt vs. political and covert (see Blee, 1998). Individuals who possess long-term and reflective cognitive capacities, but are selfishly motivated (e.g., Machiavellians) will seek benefits for their in-group at the expense of out-group members. Such individuals opt for the more political and covert strategies of racism that fit more mainstream politics (Jones, 2010). Individuals, such as psychopaths, who lack the cognitive capacity for long-term planning and forethought, however, join racist organizations that are belligerent, transparent, and militant. Thus, in both cases the individuals lack the motivation for inhibiting negative ethnocentrism; therefore, both types of individuals are attracted to racist organizations. However, only the latter type of individual lacks both motivation and capacity for inhibiting prejudicial thinking.

Summary of Predictions

In sum, indicators of slow LH strategy should serve to form protective factors against racism. In order to test this prediction, we used Latent Variable Models to demonstrate that predictors of slow LH strategy would lead to reduced negative ethnocentrism towards illegal immigrants in two cultures (San José in Costa Rica and Tucson in Arizona). The theory of *convergent* and *divergent* interest, or *mutualistic* and *antagonistic*, social strategies predicts that slow and fast LH strategists possess different *behavioral preferences* or general dispositions in social and sexual interactions, based on different social cognitive schemata. Furthermore, this theory predicts that fast LH strategists lack the requisite *mental abilities* to suppress antagonistic social behaviors, which they might otherwise inhibit. These two mechanisms are not mutually exclusive, because evolutionary thinking predicts that both traits should coevolve and reinforce each other (Figueredo & Jacobs, 2010).

Methods

Participants

Two hundred twenty three students at the University of Arizona (57% female) and 232 students at the University of Costa Rica (49% female; mean age =20.4, SD=2.41) participated in a study on group relations either voluntarily or for course credit.

Procedures

Participants filled out packets of questionnaires in a large classroom or laboratory setting. Participants were assured of their confidentiality and anonymity. All questionnaires were translated into Spanish (with particular attention paid to nuances of Spanish in San José, Costa Rica) and were then back-translated into English to assure accurate translation.

Measures of Life History Strategy

Mini-K Short Form of the ALHB (Mini-K). Slow LH strategy was assessed using the Mini-K Short Form (Figueredo et al., 2006), consisting of 20 Likert-scale items based on the 199-item Arizona Life History Battery (*ALHB*; Figueredo, 2007), which is a battery of cognitive and behavioral indicators of life history strategy compiled and adapted from various original sources. The Mini-K correlates 0.85 with the full *ALHB* (Gladden, Sisco, & Figueredo, 2008). The Mini-K includes items such as, “While growing up, I had a close and warm relationship with my biological father” and “I am closely connected to and involved in my community”. The internal consistency reliabilities were acceptable in both the Costa Rican ($\alpha=.71$) and USA samples ($\alpha=.82$).

Mating Effort Scale (MES). The 10-item Mating Effort Scale (Rowe, Vazsonyi, & Figueredo, 1997), which assesses the effort people allocate towards obtaining and retaining access to sexual partners, was used as an additional indicator of short-term mating strategies. Previous research has found that mating effort is associated with a fast LH strategy (e.g., Figueredo et al., 2005). Sample items include: “I would start a relationship with another boy (girl) before ending one with my current boyfriend (girlfriend)”. The MES demonstrated acceptable reliability in both Costa Rican ($\alpha=.75$) and USA samples ($\alpha=.72$).

Mate Value Inventory (MVI). The 17-item Mate Value Inventory, a measure of self-perceived possession of qualities that are considered desirable in a romantic or sexual partner, collected from the evolutionary and social psychological literature, was also included to assess how attractive individuals saw themselves, with respect to potential mates (Kirsner, Figueredo, & Jacobs, 2003). The *MVI* consists of traits empirically shown to be desirable in a romantic partner (e.g., “loyal,” “attractive face”). The *MVI* demonstrated acceptable reliability in both Costa Rican ($\alpha=.77$) and USA samples ($\alpha=.81$).

Emotional Intelligence (EISF). A short form of the emotional intelligence scale originally developed by Andrade, Yock, and Brenes (1999) was applied. Selection of the subset of items used in this short form was based upon two criteria: (1) a theoretical criterion that the items selected be generalizable outside academic situations, because the original long form of the scale had many items that were specific to the academic setting,

and (2) an empirical criterion that each item selected have a factor loading greater than .50 on the particular subscale to which it belonged in the original scale. Sample items on the short form include: “It is difficult for me to pay attention to people until they finish talking” and “When I get angry, I blow up without wanting it”. The *EISF* demonstrated acceptable reliability in both Costa Rican ($\alpha=.75$) and USA samples ($\alpha=.80$).

Measures of Negative Ethnocentrism

We adapted the Subtle and Blatant Prejudice Scales (Pettigrew & Merteens, 1995), the Realistic Threat Scale (Stephan & Stephan, 2000), and the Symbolic Racism Scale (Henry & Sears, 2002) for the present study, targeting analogous ethnic groups in each country relevant to different types of socio-political prejudice. Each group in one country was hypothesized to parallel a group in the other country based on the type of prejudice that group faced.

Comparable groups of immigrants were selected because they are stereotyped to pose a financial burden on the host country. In Costa Rica, Nicaraguan immigrants were selected, because of the relatively recent influx of illegal immigration of Nicaraguans into Costa Rica (Larson, 1995). The parallel group in the USA was Mexican Immigrants (Shields & Behrman, 2004). Considering the fact that the USA sample was collected at the University of Arizona (about an hour’s drive from the Mexican border) this group is highly visible and illegal Mexican immigration is a salient concern particularly in Arizona.

A second set of ethnic groups was selected based on stereotyped perceptions of physical threat. In Latin America, Columbian immigrants are common and are stereotyped to be more violent and dangerous than other groups (Franco, 2000). In the USA however, in the lingering wake of 9/11, Arab immigrants are still stereotyped in violent ways. Thus, we created comparable negative ethnocentrism scales targeting Columbian immigrants for the physical threat group in Costa Rica, and Arab immigrants as the physical threat group in the USA.

Subtle and Blatant Prejudice Scale (SBPS). Nineteen items from the Subtle and Blatant Prejudice Scale (Pettigrew & Merteens, 1995) were used to tap both forms of prejudice against minority groups. The *subtle* subscale measures three aspects of a covert form of antipathy: (1) defense of traditional values, (2) exaggeration of cultural differences, and (3) denial of positive emotions; while the *blatant* subscale taps overt antipathy based on: (1) perceived threat from out-groups, (2) opposition to intimacy with out-group members, and (3) open rejection. Sample items include “Nicaraguan immigrants living here teach their children values and skills different from those required to be successful in Costa Rica” (*subtle* subscale) and “Mexican immigrants have jobs that Americans should have” (*blatant* subscale). The internal consistency reliabilities were acceptable in both the Costa Rican ($\alpha=.87$) and USA samples ($\alpha=.80$).

Realistic Threat Scale (RTS). On the basis of the Integrated Threat Theory (Stephan & Stephan, 2000), a 4-item scale of realistic threat were developed, focusing in perceptions of political and economic threats from minority groups. Two sample items are as follows: “Nicaraguan immigrants living here threaten my personal liberties and rights” and “Mexican immigrants living here threaten my personal economic situation”. The internal consistency reliabilities were acceptable in both the Costa Rican ($\alpha=.90$) and USA samples ($\alpha=.79$).

Symbolic Racism Scales (SRS). The Symbolic Racism Scales (Henry & Sears, 2002) assess the various beliefs that: (1) ethnic prejudice and discrimination no longer exist, (2) any remaining ethnic differences in economic outcomes result from the minority group's lack of motivation to work hard enough, (3) their continuing anger over inequality is unjustified because minority groups are unwilling to work to get what they want, (4) minority groups seek special favors rather than working to get ahead, and (5) minority groups have been getting more than they deserve economically relative to the majority group. This 8-item scale was deliberately created to prevent any response biases occasioned by individuals seeking to avoid overt expressions of direct and blatant forms of racism, instead tapping into more indirect and subtle forms of racism, such as resentment over affirmative action programs. Sample items from the adapted scales included: "Over the past few years, Nicaraguan Immigrants have gotten more economically than they deserve" and "It's really a matter of some people not trying hard enough; if Mexican Immigrants would only try harder they could be just as well off as Whites". The *SRS* showed marginally acceptable to good reliability in the Costa Rican ($\alpha=.61$) and USA samples ($\alpha=.80$).

Internal and external motivation to avoid prejudice (IMS & EMS). The IMS and EMS are both 5-item scales that determine whether one's motivation to appear non-prejudiced is internal, external, both, or non-existent (Devine, Plant & Amodio, 2002). The items were adjusted for the present study and its target groups for the IMS (e.g., "I am personally motivated by my beliefs to be non-prejudiced toward Mexican/Nicaraguan immigrants.") as well as the EMS (e.g., "I try to act non-prejudiced toward Mexican/Nicaraguan immigrants because of pressure from others."). The IMS demonstrated acceptable reliability in both Costa Rican ($\alpha=.85$) and USA samples ($\alpha=.83$), as did the EMS (Costa Rican sample: $\alpha=.79$; USA sample: $\alpha=.89$). However, the EMS did not correlate significantly to anything else in this study and was therefore not used in the present analyses.

Statistical Analyses

All univariate and multivariate analyses were performed using SAS 9.1 and EQS 6.1. Because it was not possible to analyze all of the individual subscales within a single multivariate model simultaneously due to the limitations of our sample sizes ($N < 250$ per sample), a hierarchical analytical strategy was employed. Unit-weighted common factor scores (Gorsuch, 1983) were estimated, using SAS PROC STANDARD and DATA, as the means of the standardized scores for all non-missing subscales on each factor (Figueredo, McKnight, McKnight, & Sidani, 2000).

Both the Cronbach's alphas and the covariance matrices of the subscales were computed using SAS PROC CORR. The factor structures (subscale-factor correlations) of the unit-weighted factors are presented in Tables 1 and 2.

Table 1. Unit-Weighted Factor Structure of the Protective Life History Factor

Subscales	Factor Loadings
<i>Mini-K</i>	.75*
<i>Mate Value Inventory</i>	.67*
<i>Emotional Intelligence</i>	.70*
<i>Mating Effort Scale</i>	-.48*

* $p < 0.05$

Table 2. Unit-Weighted Factor Structure of the Negative Ethnocentrism Factor

Subscales	Factor Loadings
<i>Subtle and Blatant Prejudice Scale</i>	.82*
<i>Realistic Threat Scale</i>	.79*
<i>Symbolic Racism Scale</i>	.75*
<i>Internal Motivation Scale</i>	-.77*

* $p < 0.05$

All the unit-weighted factor scales were entered as manifest variables for multivariate causal analysis within a single structural equation model. Structural equation modeling (SEM) was performed by EQS. Structural equation modeling between these constructs then provided a multivariate causal analysis of the structural relations between them. SEMs were evaluated by use of Chi-Squared, the Bentler-Bonett Normed Fit Index (*NFI*), the Bentler-Bonnett Comparative Fit Index (*CFI*), and the Root Mean Squared Error of Approximation (*RMSEA*). Index values of the *NFI* and *CFI* greater than 0.90 are considered satisfactory levels of practical goodness-of-fit (Bentler & Bonnett, 1980; Bentler, 1995), whereas *RMSEA* values of 0.05 or less are considered indications of good fit, values between 0.08 and 0.10 are considered indications of a mediocre fit, and values greater than 0.10 are considered indications of a poor fit (Steiger & Lind, 1980; Browne & Cudeck, 1993). The *CFI* was selected because it is adjusted for model parsimony and performs well with moderate to small sample sizes ($N < 250$), especially with Maximum Likelihood estimation (Bentler, 1990; Hu & Bentler, 1995). Alternative fit indices, such as the Bentler-Bonett Non-Normed Fit Index (*NNFI*), provide poor estimates of model fit with smaller samples (Hu & Bentler, 1995).

The samples collected in the USA of America (USA) and in Costa Rica (CR) were compared by means of Multisample SEM analysis. Because preliminary univariate analyses detected no significant interactions with the other regression parameters of the specific targets of Negative Ethnocentrism in the either the USA or CR sample, we obtained enough participants in each sample (USA=232, CR=223) for Multisample SEM analysis by pooling the two alternative USA targets (Arab and Mexican Immigrants to the USA) within the USA sample and comparing them to the analogous two pooled CR

targets (Columbian and Nicaraguan Immigrants to CR). Cross-sample equality constraints equating model parameters cross-culturally were also evaluated with these same indices of fit as well as by Lagrange Multiplier Tests for each specific equality constraint.

Results

Structural Equation Models

For both cultures, we hypothesized that Male Sex of Respondent would causally influence the Protective Life History Factor and that both Male Sex of Respondent and the Protective Life History factor would causally influence the Negative Ethnocentrism factor. Furthermore, we hypothesized that these structural relations would be statistically equivalent across cultures.

The Multisample SEM with full cross-sample equality constraints on all model parameters fit almost perfectly according to all statistical and practical indices of fit considered ($X^2(3) = 2.791, p = 0.4282, NFI = 0.960, CFI = 1.000, RMSEA = 0.000$, with a 90% confidence interval of 0.000 to 0.109). Furthermore, the Lagrange Multiplier Tests for the specific cross-sample equality constraints indicated that none of them were statistically significant and therefore individually rejectable. These results are displayed graphically in Figure 1.

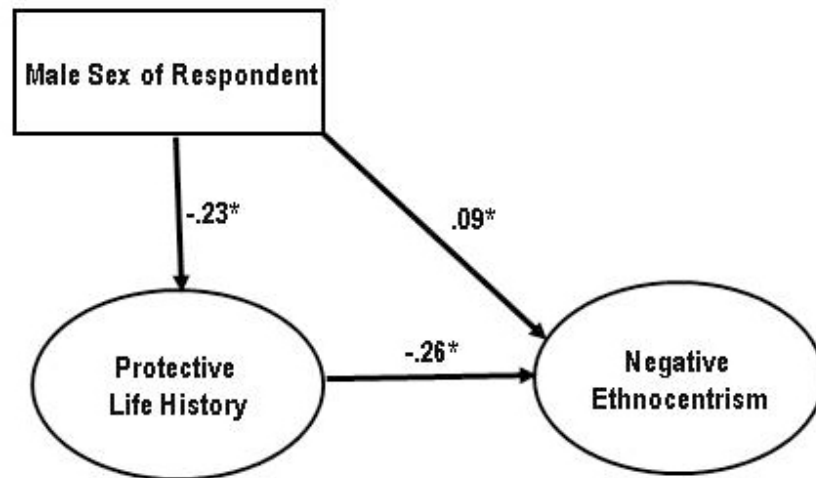


Figure 1. Multisample structural equations model for sex, slow life history, and negative ethnocentrism.

The standardized path coefficients for the cross-culturally validated SEM were as follows: (1) Male Sex of Respondent predicted significantly faster Life History ($\beta = -0.23, t = 5.096, p < 0.05$); (1) Slower Life History predicted significantly lower Negative Ethnocentrism ($\beta = -0.26, t = 5.565, p < 0.05$); (1) Male Sex of Respondent predicted significantly higher Negative Ethnocentrism ($\beta = -0.09, t = 2.049, p < 0.05$).

The finding that Male Sex of Respondent predicted significantly faster Life History is one that has been replicated many times in this area of research, most recently by Gladden, Sisco, and Figueredo (2008). Using self-report measures of LH, such as the Arizona Life History Battery (*ALHB*) or the Mini-K Short Form, based on theoretically-specified cognitive and behavioral indicators of LH strategy, it is typically found that male humans are between one-quarter to one-third of a standard deviation *faster* in LH strategy than female humans.

Discussion

A comparison of results from two culturally discrepant samples supported the hypothesis that slow LH strategy would function as a protective factor against negative ethnocentrism.

First, a Protective Life History factor was identified that encompassed the behavioral preferences for mutualistic and prosocial social strategies, the higher mate value, the lower mating effort, and the enhanced levels of emotional intelligence predicted. This protective factor thus encompasses the necessary components of motivation and capacity outlined by Devine (1989).

Second, a Negative Ethnocentrism factor was identified that encompassed prejudice towards out-groups, feelings of threat from out-groups, modern attitudes of racism towards out-groups, and was inversely indicated by internal motivation to avoid prejudice towards out-groups.

Third, Respondent Sex had the predicted effect on the Protective Life History factor, with males being significantly faster strategists, and both Respondent Sex and Protective Life History had the predicted direct effects on Negative Ethnocentrism, with males being more negatively ethnocentric and slow life history strategists being significantly less so. Slow Life History generally inhibited Negative Ethnocentrism for both sexes, functioning in the model as a protective factor, but being male made respondents a bit more negatively ethnocentric directly as well as indirectly through their systematically faster Life History, functioning as a risk factor. These effects were all statistically equivalent in magnitude and direction across the two samples, indicating cross-cultural generalizability at least in comparing participants in the USA and Costa Rica.

We therefore conclude that greater in-group altruism, as reflected in a Slow Life History strategy, does not necessarily imply greater out-group hostility, as reflected in Negative Ethnocentrism. Our findings instead indicate that the *mutualistic* social strategies characteristic of a Slow Life History interfere with and inhibit the *antagonistic* social strategies that might otherwise promote Negative Ethnocentrism in individuals.

Furthermore, these structural relationships were found to be parametrically *invariant* across two contemporary societies. This indicates that we did not find any significant differences in the causal processes we have identified as underlying Negative Ethnocentrism between the inhabitants of two otherwise very different nations. This suggests that the causal processes that we are modeling might be features of an evolved and species-typical human nature, which might be minimally to perhaps not at all affected by different languages, cultures, and social institutions.

Nevertheless, some intriguing discrepancies with some previous work remain. For example, Figueredo and Wolf (2009) recently reported cross-cultural empirical results demonstrating that slow LH strategists exhibit a higher degree of positive

assortative pairing among both friends and lovers, as a theoretically expected consequence of the selective pressures underlying slow LH strategy (see Ellis et al., 2009). Although this finding appears superficially to be consistent with Whitmeyer (1997), it is actually logically *inconsistent* with the predictions of that model. The basic paradox is that we found slow LH individuals to be both: (1) *more* assortatively mated on both LH and Mate Value, and (2) *less* negatively ethnocentric. This is an apparent contradiction that has yet to be resolved.

Another interesting paradox is that, in a structural model similar to the present one, Gladden, Sisco, and Figueredo (2008) reported that the Protective LH Factor *fully mediated* the effect of Male Sex of Respondent on a latent common factor representing Sexually Coercive Behaviors. This means that even after the indirect effect of the generally faster LH of male respondents was accounted for by that of the Protective LH Factor, Male Sex of Respondent had no residual direct effect on Sexually Coercive Behaviors. In contrast, the present structural model features a statistically significant, although admittedly not very large in magnitude, residual direct effect of Male Sex of Respondent on the Negative Ethnocentrism Factor. This direct effect existed even *after* the indirect effect of the generally faster LH of male respondents was accounted for by that of the Protective LH Factor, which was intentionally constructed in a very similar way to the one reported in Gladden, Sisco, and Figueredo (2008). This effect was positive in direction, indicating that male respondents were *more* negatively ethnocentric than would be expected from their generally faster LH strategy alone. We attribute this additional effect of the traditional predominance of males as participants in inter-group warfare within the overwhelming majorities of ancestral as well as contemporary human societies. Male humans were typically the warriors and could therefore be expected to evolve more negative ethnocentrism as an adaptation to that historical role.

More research is clearly needed to shed more light on some of these remaining questions.

Received March 27, 2010; Revision received October 2, 2010; Accepted October 4, 2010

References

- Allport, G. (1954). *The nature of prejudice*. Reading, MA: Perseus Book Publishing.
- Amodio, D. M., Harmon-Jones, E., & Devine, P. G. (2003). Individual differences in the activation and control of affective race bias as assessed by startle eyeblink responses and self-report. *Journal of Personality and Social Psychology*, *84*, 738–753.
- Andrade R., X., Navarro S., O. & Yock, C., I. (1999). *Construcción y Validación de una Prueba para Medir Inteligencia Emocional* (Licentiate thesis). San José, Costa Rica: Universidad de Costa Rica, Escuela de Estadística.
- Baldwin, M.W., Fehr, B., Keedian, E., Seidel, M., & Thomson, D.W. (1993). An exploration of the relational schemata underlying attachment styles: Self-report and lexical decision approaches. *Personality and Social Psychology Bulletin*, *19*, 746-754.
- Bartz, J. A., & Lydon, J. E. (2004). Close Relationships and the working self-concept: Implicit and explicit effects of priming attachment on agency and communion. *Personality and Social Psychology Bulletin*, *30*, 1389-1401.

- Belsky, J., Steinberg, L., & Draper, P. (1991). Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development, 62*, 647-670.
- Bentler, P. M. (1995). *EQS: Structural equations program manual*. Los Angeles, CA: Multivariate Software.
- Bentler, P. M., & Bonnett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588-606.
- Blee, K. M. (1998). White-knuckle research: Emotional dynamics in fieldwork with racist activists. *Qualitative Sociology, 21*, 381-399.
- Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York: Basic.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. *Sociological Methods and Research, 21*, 230-258.
- Chamberlin, T. C. (1897). The method of multiple working hypotheses. *Journal of Geology, 5*, 837-848.
- Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56*, 5-18.
- Devine, P. G., Plant, A. E., & Amodio, D. M. (2002). The regulation of explicit and implicit race bias: The role of motivations to respond without prejudice. *Journal of Personality and Social Psychology, 82*, 835-848.
- Duckitt, J. (2006). Differential effects of right wing authoritarianism and social dominance orientation on out-group attitudes and their mediation by threat from competitiveness to out-groups. *Personality and Social Psychology Bulletin, 32*, 684-696.
- Ellis, B. J., Figueredo, A. J., Brumbach, B. H., & Schlomer, G. L. (2009). Mechanisms of environmental risk: The impact of harsh versus unpredictable environments on the evolution and development of life history strategies. *Human Nature, 20*, 204-268.
- Fein, S., & Spencer, S. (1997). Prejudice as self-image maintenance: Affirming the self through derogating others. *Journal of Personality and Social Psychology, 73*, 31-44.
- Figueredo, A. J., & Jacobs, W. J. (2010). Aggression, risk-taking, and alternative life history strategies: The behavioral ecology of social deviance. In M. Frias-Armenta & V. Corral-Verdugo (Eds.), *Biopsychosocial perspectives on interpersonal violence*. Hauppauge, NY: Nova Science Publishers, in press.
- Figueredo, A. J. (2007). *The Arizona Life History Battery* [[Electronic Version](http://www.u.arizona.edu/~ajf/alhb.html)]. <http://www.u.arizona.edu/~ajf/alhb.html>
- Figueredo, A. J., Brumbach, B. H., Jones, D. N., Sefcek, J. A., Vásquez, G., & Jacobs, W. J. (2007). Ecological constraints on mating tactics. In Geher, G., & Miller, G.F., (Eds.), *Mating Intelligence: Sex, Relationships and the Mind's Reproductive System* (pp. 335-361). Mahwah, NJ: Lawrence Erlbaum.
- Figueredo, A. J., Hammond, K. R., & McKiernan, E. C. (2006). A Brunswikian evolutionary developmental theory of preparedness and plasticity. *Intelligence, 34*(2), 211-227.
- Figueredo, A. J., McKnight, P. E., McKnight, K. M., & Sidani, S., (2000). Multivariate modeling of missing data within and across assessment waves. *Addiction, 95* (Supplement 3), pp. S361-S380.

- Figueredo, A. J., Vásquez, G., Brumbach, B. H., & Schneider, S. M. R. (2007). The K-factor, covitality, and personality: A psychometric test of life history theory. *Human Nature, 18*(1), 47-73.
- Figueredo, A. J., Vásquez, G., Brumbach, B. H., & Schneider, S. M. R. (2004). The heritability of life history strategy: The K-factor, covitality, and personality. *Social Biology, 51*, 121-143.
- Figueredo, A. J., Vásquez, G., Brumbach, B. H., Schneider, S. M. R., Sefcek, J. A., Tal, I. R., Hill, D., Wenner, C. J., & Jacobs, W. J. (2006). Consilience and life history theory: From genes to brain to reproductive strategy. *Developmental Review, 26*, 243-275.
- Figueredo, A. J., Vásquez, 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*(8), 1349-1360.
- Franco, S. (2000). International dimensions of Colombian violence. *International Journal of Health Services, 30*, 163-185.
- Gladden, P. R., Sisco, M., & Figueredo, A. J. (2008). Sexual coercion and life history strategy. *Evolution and Human Behavior, 29*, 319-326.
- Henry, P. J., & Sears, D. O. (2002). The symbolic racism 2000 scale. *Political Psychology, 23*, 253-283.
- Hodson, G., Hogg, S. M., & MacInnis, C. C. (2009). The role of “dark personalities” (narcissism, Machiavellianism, psychopathy), Big Five personality factors, and ideology in explaining prejudice. *Journal of Research in Personality, 43*, 686-690.
- Hu, L. T., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76-99). Thousand Oaks, CA: Sage.
- Jones, D. N. (2010). The Dark Triad and hatred: How political ideology pushes psychopathy and Machiavellianism towards different types of racism and different racist groups. Manuscript submitted for publication.
- Kirsner, B. R., Figueredo, A. J., & Jacobs, W. J. (2003). Self, friends, and lovers: Structural relations among Beck Depression Inventory scores and perceived Mate Values. *Journal of Affective Disorders, 75*, 131-148.
- Kreindler, S. A. (2005). A dual group processes model of individual differences in prejudice. *Personality and Social Psychology Review, 9*, 90-107
- Larson, E. M. (1993). Nicaraguan refugees in Costa Rica from 1980–1993. *Yearbook, Conference of Latin Americanist Geographers, 19*, 67–79.
- Loo, R. & Loewen, P. (2004). Confirmatory factor analyses of scores from full and short versions of the Marlowe-Crowne social desirability scale. *Journal of Applied Social Psychology, 34*, 2343-2352.
- MacDonald, K. B. (1994). *A People that Shall Dwell Alone: Judaism as a Group Evolutionary Strategy*. Westport, CT: Praeger.
- MacDonald, K. B. (1998). *Separation and Its Discontents: Toward an Evolutionary Theory of Anti-Semitism*. Westport, CT: Praeger.
- Malamuth, N. M. (1996). The confluence model of sexual aggression: Feminist and evolutionary perspectives. In Buss, D. M., & Malamuth, N. M., (Eds.), *Sex, power, conflict: Evolutionary and feminist perspectives* (pp. 269-295). New York, NY: Oxford University Press.

- Malamuth, N. M. (1998). The confluence model as an organizing framework for research on sexually aggressive men: Risk moderators, imagined aggression, and pornography consumption. In Geen, R. G., & Donnerstein, E., (Eds.) *Human aggression: Theories, research, and implications for social policy* (pp. 229-245). San Diego, CA: Academic Press.
- McIlwaine, C. (1997). Vulnerable or poor? A study of ethnic and gender disadvantage among Afro-Caribbeans in Limon, Costa Rica. *The European Journal of Development Research*, 9, 35-61.
- Merskin, D. (2004). The construction of Arabs as enemies: Post-September 11 discourse of George W. Bush. *Mass Communication & Society*, 7, 157-175.
- Mikulincer, M., & Shaver, P.R. (2007). Boosting attachment security to promote mental health, prosocial values, and intergroup tolerance. *Psychological Inquiry*, 18, 139-156.
- Nesse, R. M. (2007). Runaway social selection for displays of partner value and altruism. *Biological Theory*, 2(2), 143-155.
- Park, J. H., Faulkner, J., & Schaller, M. (2003). Evolved disease-avoidance processes and contemporary anti-social behavior: prejudicial attitudes and avoidance of people with physical disabilities. *Journal of Nonverbal Behavior*, 27, 65-87.
- Petrides, K. V. & Furnham, A. (2001). Trait emotional intelligence: Psychometric investigation with reference to established trait taxonomies. *European Journal of Personality*, 15, 425-448.
- Petrides, K. V. & Furnham, A. (2003). Trait emotional intelligence: Behavioural validation in two studies of emotion recognition and reactivity to mood induction. *European Journal of Personality*, 17, 39-57.
- Petrides, K. V. & Furnham, A. (2006). The role of trait emotional intelligence in a gender-specific model of organizational variables. *Journal of Applied Social Psychology*, 36, 552-569.
- Pettigrew, T. F., & Meertens, R. W. (1995). Subtle and blatant prejudice in Western Europe. *European Journal of Social Psychology*, 25, 57-75.
- Pietromonaco, P. R., & Barrett, L. F. (2000). The internal working models concept: What do we really know about the self in relation to others? *Review of General Psychology*, 4(2), 155-175.
- Platt, J. R. (1964). Strong inference. *Science*, 146, 347-53.
- Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology*, 67, 741-763.
- Ross, L. T., & Hill, E. M. (2002). Childhood unpredictability, schemas for unpredictability, and risk taking. *Social Behavior and Personality*, 30, 453-474.
- Rowe, D. C., Vazsonyi, A. T., & Figueredo, A. J. (1997). Mating effort in adolescence: Conditional or alternative strategy? *Personality and Individual Differences*, 23, 105-115.
- Rushton, J. P. (2005). Ethnic nationalism, evolutionary psychology, and genetic similarity theory. *Nations and Nationalism*, 11, 489-507.
- Rushton, J. P. (1989). Genetic similarity, human altruism, and group selection. *Behavioral and Brain Sciences*, 12(3), 503-59.

- Salovey, P., Hsee, C. K., & Mayer, J. D. (1993). Emotional intelligence and the self-regulation of affect. In D. M. Wegner & J. W. Pennebaker (Eds.), *Handbook of mental control* (pp. 258–277). Englewood Cliffs, NJ: Prentice Hall.
- Salter, F. (2003). *On Genetic Interests: Family, Ethnicity and Humanity in an Age of Mass Migration*. Frankfurt, Germany: Peter Lang.
- Sears, D. O., & Henry, P. J. (2003). The origins of symbolic racism. *Journal of Personality and Social Psychology*, 85, 259-275.
- Shields, M. K., & Behrman, R. E. (2004). Children of immigrant families: Analysis and recommendations. *The Future of Children*, 14, 4-15.
- Steiger, J. H., & Lind, J. C. (1980, May). *Statistically-based tests for the number of common factors*. Paper presented at the annual spring meeting of the Psychometric Society in Iowa City.
- Stephan, W. S., & Stephan C. W. (2000). An integrated threat theory of prejudice. In S. Oskamp (Ed.), *Reducing prejudice and discrimination* (pp. 23-45). Mahwah, NJ: Lawrence Erlbaum.
- Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (eds), *The Social Psychology of Group Relations* (pp. 33–47). Monterey, CA: Brooks-Cole.
- Tremblay, P. F., & Dozois, D. J. A. (2009). Another perspective on trait aggressiveness: Maladaptive schemas. *Personality and Individual Differences*, 46(5-6), 569-574.
- West-Eberhard, M. J. (1979). Sexual selection, social competition, and evolution. *Proceedings of the American Philosophical Society*, 123, 222-234.
- West-Eberhard, M. J. (2003). *Developmental Plasticity and Evolution*. New York: Oxford University.
- Whitmeyer, J. M. (1997). Endogamy as a basis for ethnic behavior. *Sociological Theory*, 15, 162-178.
- Wilson, E.O. (1975). *Sociobiology: The new synthesis*. Cambridge, MA: Harvard University Press.
- Wilson, E. O. (1998). *Consilience: The unity of knowledge*. New York: Knopf.