

College of Saint Benedict and Saint John's University

DigitalCommons@CSB/SJU

Psychology Faculty Publications

Psychology

6-2003

A Research Agenda for Political Personality and Leadership Studies: An Evolutionary Proposal

Aubrey Immelman

College of Saint Benedict/Saint John's University, aimmelman@csbsju.edu

Theodore Millon

Institute for Advanced Studies in Personology and Psychopathology

Follow this and additional works at: https://digitalcommons.csbsju.edu/psychology_pubs



Part of the [Leadership Studies Commons](#), [Other Ecology and Evolutionary Biology Commons](#), [Other Neuroscience and Neurobiology Commons](#), [Other Political Science Commons](#), [Other Psychology Commons](#), and the [Personality and Social Contexts Commons](#)

Recommended Citation

Immelman, A., & Millon, T. (2003, June). *A research agenda for political personality and leadership studies: An evolutionary proposal*. Unpublished manuscript, Unit for the Study of Personality in Politics, St. John's University and the College of St. Benedict, Collegetown and St. Joseph, MN. Digital Commons. http://digitalcommons.csbsju.edu/psychology_pubs/124/

Copyright © 2003 by [Unit for the Study of Personality in Politics](#) / Aubrey Immelman

A RESEARCH AGENDA FOR POLITICAL PERSONALITY AND LEADERSHIP STUDIES: AN EVOLUTIONARY PROPOSAL

Aubrey Immelman

Department of Psychology
Saint John's University | College of Saint Benedict
St. Joseph, MN 56374
Telephone: (320) 363-5481
E-mail: aimmelman@csbsju.edu

Theodore Millon

Institute for Advanced Studies in Personology and Psychopathology
Coral Gables, Florida

Copyright © 2003 [Unit for the Study of Personality in Politics](#)

Acknowledgments. We thank George Marcus, Blema Steinberg, and Linda Mealey for helpful comments and suggestions. Portions of this paper draw from the authors' publications cited in the references, especially Immelman (2003) and Millon (1990, 2003).

Abstract

Despite major neuroscientific advances in the past two decades and parallel conceptual refinement in evolutionary theory, personality-in-politics inquiry remains adrift, divorced from these broader spheres of scientific knowledge. This paper reviews the neurobiological substrates of three major domains of evolutionary biology and behavioral ecology relevant to political personality assessment and the psychological examination of political leaders; furnishes a context and set of guiding ideas to revitalize the study of the person as biopsychosocial entity in politics; advances a generative theory of personality and political leadership performance; and proposes an agenda for advancing personality-in-politics and leadership inquiry, informed by insights derived from the contextually adjacent fields of behavioral neuroscience and evolutionary ecology.

Keywords: evolutionary psychology, personality assessment, political leadership

Introduction

David Buss (1999) has bluntly asserted that “theories of personality inconsistent with evolutionary principles stand little or no chance of being correct” (p. 52). George Marcus (2002), pointing to recent advances in neuroscience, has issued a call for “entirely new theories, new concepts, and new data” capable of rehabilitating political psychology from the limited, though currently dominant, social-psychological and cognitive conceptual frameworks (pp. 100–102). “Conventional wisdom,” he notes,

whether as to substantive conclusions, methodologies, or typologies, is, by definition, well entrenched. As such, the “state of the field” often becomes resistant to self-examination due to our comfort with prevailing accounts. ... Still, however circumspect we must be in advancing our current understandings, we should not shy away from the obligation to do an even better job of self-examination, for how else can political psychology become that scientific enterprise? (p. 104)

Marcus’s agenda focuses on “putting emotion in the center of the study of human judgment” (Marcus, 2002, p. 101; see also Marcus, Neuman, & MacKuen, 2000); however, his incisive critique is especially relevant to the study of political personality and leadership. For example, his studies of emotion in politics apply directly to the psychological assessment of presidential candidates (Marcus, 1988) and political participation in the context of presidential campaigns (Marcus & MacKuen, 1993).

In our judgment, much of political personology, no less personality psychology as a whole, remains adrift, divorced from broader spheres of scientific knowledge — that is, isolated from firmly grounded, universal principles — leading us to continue building the patchwork quilt of concepts and data domains that characterize the field. Preoccupied with but a small part of the larger puzzle of nature, we may fail to draw on the rich possibilities to be found in parallel realms of scientific pursuit. With few exceptions, cohering concepts that would connect the subject domain of political personology to parallel domains in the natural sciences have not been adequately formulated.

Personological features may be partitioned conceptually for pragmatic or scientific purposes, but they are segments of an inseparable biopsychosocial entity. To take this view is not to argue that different spheres of scientific inquiry must be collapsed or even equated, but that there may be value in seeking a single, overarching conceptual system that interconnects ostensibly diverse subjects such as physics, biology, and psychology (Millon, 1990; E. O. Wilson, 1998).

The purpose of this paper is to furnish both a context and a set of guiding ideas that may enrich our study of the person-as-biopsychosocial-entity in politics, informed by contextually adjacent fields such as behavioral neuroscience and evolutionary theory.

An Agenda for Advancing Personality-in-Politics Inquiry in a Neuroscientific, “Postcognitive Era”

In the present paper, the terms *personality* and *politics* are employed in Fred Greenstein’s (1992) narrowly construed sense. Politics, by this definition, “refers to the politics most often studied by political scientists — that of civil government and of the extra-governmental processes that more or less directly impinge upon government, such as political parties” and campaigns. Personality, as narrowly construed in political psychology, “excludes political attitudes and opinions ... and applies only to nonpolitical personal differences” (p. 107).

From an evolutionary–ecological perspective, personality constitutes ontogenetic, manifest, adaptive styles of thinking, feeling, acting, and relating to others, shaped by the interaction of latent, phylogenetic, biological endowment and social experience. This construal is consistent with the contemporary view of personality as

a complex pattern of deeply embedded psychological characteristics that are largely nonconscious and not easily altered, expressing themselves automatically in almost every facet of functioning. Intrinsic and pervasive, these traits emerge from a complicated matrix of biological dispositions and experiential learnings, and ultimately comprise the individual’s distinctive pattern of perceiving, feeling, thinking, coping, and behaving. (Millon, 1996, p. 4)

For political personality inquiry to remain a thriving scholarly endeavor, it will need to account, at a minimum, for the patterning of personality variables “across the entire matrix of the person” (Millon & Davis, 2000, pp. 2, 65), with full recognition of the neurobiological and evolutionary–ecological foundations of human behavior. Moreover, it will be incumbent upon political personologists to advance a generative theory of personality and political leadership performance.

The Need to Proceed From Description of Observable Phenomena to Theoretical Systematization

Ultimately, scholarly progress in personality-in-politics inquiry hinges on its success in advancing from the “natural history stage of inquiry” to a “stage of deductively formulated theory” (Northrop, 1947). The intuitive psychologist’s “ability to ‘sense’ the correctness of a psychological insight” (Millon, 2003, p. 5) presents an easily overlooked obstacle to progress in political-personological inquiry. Inadequate theoretical systematization is a conceptual shortcoming even more fundamental than the problem alluded to by Marcus (2002) in noting that, prior to the development of neuroscientific measurement technologies, the question of “how the brain generates emotion, reason, consciousness, memory, and so forth ... [had] been driven by the unreliable and often misleading devices of external observation, introspection, and self-report” (p. 100).

According to philosopher of science Carl Hempel (1965), in the early stages of a scientific discipline’s development investigators primarily strive “to describe the phenomena under study and to establish simple empirical generalizations concerning them,” using terms that

“permit the description of those aspects of the subject matter which are ascertainable fairly directly by observation” (p. 140). Margaret Hermann’s (1974, 1980) early work in the area of political personality and leadership illustrates this initial stage of scientific development. In the words of Hempel (1965),

The shift toward theoretical systematization is marked by the introduction of new, “theoretical” terms, which refer to various theoretically postulated entities, their characteristics, and the processes in which they are involved; all of these are more or less removed from the level of directly observable things and events. (p. 140)

Hermann’s (1987) proposal of a model signifying how leaders’ observable personal characteristics “link to form role orientations to foreign affairs” (p. 162) represents considerable progress in this direction; however, it lacks the systematic import that recent advances in evolutionary ecology and neuroscience stand to offer personality-in-politics inquiry.

The Need for Systematic Import

Theoretical systematization and empirical import (operational definitions) are necessary but not sufficient for scientific progress.

To be scientifically useful a concept must lend itself to the formulation of general laws or theoretical principles which reflect uniformities in the subject matter under study, and which thus provide a basis for explanation, prediction, and generally scientific understanding. (Hempel, 1965, p. 146)

The most striking instance of this principle of systematic import, according to Hempel (1965), is the periodic system of the elements, which permitted highly specific, accurate predictions (p. 147). Hempel chronicled similar scientific progress in biological taxonomic systems, which proceeded from primitive classification based on observable characteristics to a more advanced phylogenetic–evolutionary basis (p. 149).

For personality-in-politics inquiry to continue advancing as a scholarly discipline, it will have to come to grips with the canon of systematic import. At base, this means that theoretical systematizations cannot be constructed on the foundation of precisely those personal characteristics from which they were originally inferred (see Immelman, 2003, pp. 604–605; Millon, 2003, pp. 4–5). To do so would be to regress to the pitfall of circularity implicit in Greenstein’s (1992) critique that

single-case and typological studies alike make inferences about the inner quality of human beings ... from outer manifestations — their past and present environments ... and the pattern over time of their political responses. ... They then use those inferred constructs to account for the same kind of phenomena from which they were inferred — responses in situational contexts. The danger of circularity is obvious, but tautology can be avoided by reconstructing personality from some response patterns and using the reconstruction to explain others. (pp. 120–121)

Better still, would be for personologists to reconstruct the scaffolding of personality from its foundations in the adjacent, more advanced fields of neuroscience and evolutionary ecology.

The Need for a Generative, Neuroscientifically Informed Evolutionary Theory of Personality and Political Performance

Ideally, conceptual systems for the study of political personality and leadership performance should constitute a comprehensive, generative, theoretically coherent framework consonant with established principles in the adjacent sciences (particularly the more mature natural sciences; see Millon, 2003, pp. 3–8), congenial with respect to accommodating a diversity of politically relevant personal characteristics, and capable of reliably predicting meaningful political outcomes. The problem bedeviling contemporary personality-in-politics inquiry is more profound than the precarious perch of leadership performance theories on a fragmented foundation of primitive, observationally based personality theories — neuroscientifically informed though they may be. In his critique of postwar research directions in political psychology, James Davies (1973) declared:

There is ... a kind of atrophy of theory and research that can help us link observable acts with their deeply and generally antecedent causes in the human organism, notably the nervous and endocrine systems. Aristotle sought such relationships. So did Hobbes, whose *Leviathan* (1651) founded its analysis of political institutions on a theory of human nature. And likewise, Lasswell has sought to relate fundamental determinants to observable effects — and vice versa. (p. 26)

In some respects, personality-in-politics inquiry has regressed in the past three decades; a basic necessity in addressing Davies’s critique, albeit belatedly, is to draw a clear distinction between “true,” theoretically deduced nosologies and those that provide a mere explanatory summary of known observations and inferences (see Millon, 1990, p. 105). The fundamental importance of this necessary condition for scientific progress is aptly conveyed in Hempel’s (1965) proposition that scientific classification ought to have an “objective existence in nature, ... ‘carving nature at the joints,’ in contradistinction to ‘artificial’ classifications, in which the defining characteristics have few explanatory or predictive connections with other traits” (p. 147). Hempel’s dictum accurately captures the essence of scientific advancement, which is epitomized by taxonomic systems “based on theoretical concepts” progressively displacing “classifications defined by reference to manifest, observable characteristics (Hempel, 1965, pp. 148–149).

Greenstein (1987), pointing to the work of Steve Gangestad and Mark Snyder (1985) and Leslie Morey (1985), acknowledged the substantial progress since the publication of his seminal *Personality and Politics* (1969) “in grounding complex psychological typologies empirically,” yet pessimistically proclaimed that “complex typologies are not easily constructed and documented” (Greenstein, 1987, p. xiv). As we show in this paper, recent advances in evolutionary theory, buttressed by flourishing neuroscientific understanding of the biological substrates of affect, behavior, and cognition at the molecular level, afford a timely resolution of this dilemma. Fundamentally, it offers the promise of “carving nature at the joints” by suggesting a generative framework for a model of political personality and leadership founded upon latent phylogenetic–evolutionary principles rather than on observable characteristics and surface features.

Ironically, despite major advances in behavioral neuroscience, evolutionary ecology, personality research, and clinical science in the past two decades (see Millon, 2003), personality-in-politics inquiry has stagnated, with little cross-pollination from these adjacent disciplines. In our judgment, that ennui has run its course; at the turn of the century, personality-in-politics inquiry is poised on the threshold of a new personology. The payoff, should political psychology successfully rise to the challenge, is progression from a primitive, “developmental” stage of scientific development to a paradigmatic, “normal science” (Kuhn, 1970) of political personology.

From Cognitive Revolution to Evolutionary Neuroscience

On the crest of major breakthroughs in evolutionary biology during the preceding quarter-century, the emerging evolutionary perspective in psychology since the mid-1980s (see D. M. Buss, 1999; Millon, 1990, 2003) represents the first major theoretical shift in the discipline since the cognitive revolution of the 1950s and 1960s. Marcus (2002) is quite unambiguous in stating, “The remarkable work now ongoing in neuroscience ends the long period of speculation of how the brain works” (p. 100).

Conceptually, the new neuroscientifically grounded evolutionary–ecological perspective on personality has the integrative capacity to subsume major tenets of psychodynamic, behavioral, humanistic, interpersonal, cognitive, biological, and trait approaches to personality by grafting them onto broader spheres of scientific knowledge — domains of knowledge rooted in the natural sciences. *Methodologically*, the new personological science offers a theoretically coherent alternative to traditional conceptual frameworks and assessment methodologies for the psychological examination of political leaders (see Immelman, 1993, 1998, 2002).

The Role of Evolutionary Theory as a Generative Framework for a Neuroscience of Personality

Evolutionary social psychologist Douglas Kenrick (1994) notes that the biological roots of human nature, expressed in the genes, provide the link between evolution and social behavior. This perspective suggests that neuroscientific explanations, as *proximate causes* of personality functioning, offer an incomplete, unsatisfactory account of behavior when isolated from the *ultimate cause* explanations provided by an evolutionary framework. Thus, our discussion of the biological substrates of personality is embedded in evolutionary theory — not only to account for the adaptive functions that these biochemical substrates subservise, but as an integrative, heuristic, generative source for conceptualizing the attributes of personality.

This power of evolutionary theory in that regard is implicit in the fact that all living organisms seek to avoid injury, find nourishment, and reproduce their kind if they are to survive and maintain their populations. Each species displays commonalities in its adaptive or survival style. Within each species, however, there are differences in style and differences in the success with which its various members adapt to the diverse and changing environments they face (see, for example, D. M. Buss, 1991; Simpson & Kenrick, 1996; D. S. Wilson, 1994). In these simplest of terms, differences among personality styles would be conceived as representing the more-or-less distinctive ways of adaptive functioning that the human organism exhibits as it

relates to its typical range of environments — including political environments and the realm of leadership, the locus of concern in the present endeavor.

Toward an Ecology of Mind

The role of evolution is most clearly grasped when paired with the principles of ecology. So conceived, the procession of evolution represents a series of serendipitous transformations in the structure of a phenomenon (e.g., elementary particle, chemical molecule, living organism) that appear to promote survival in both its current and future environments. Such processions usually stem from the consequences of either random fluctuations (such as mutations) or replicative reformations (e.g., recombinant mating) among an infinite number of possibilities. Evolution is defined when these restructurings enable a natural entity (e.g., species) or its subsequent variants to survive within present and succeeding ecological milieus. It is the continuity through time of these fluctuations and reformations that comprises the sequence we characterize as evolutionary progression.

In recent decades, evolution-oriented psychologists and biologists have begun to explore how the mind may have evolved to solve the problems of basic survival, ecological adaptation, and species replication and diversification. These well-crafted formulations are distinctly different from other, more traditional models employed to characterize human functioning.

The human mind is but the most recent phase in the long history of organic life; there is no reason to assume that the exigencies of life have differed in their essentials among early and current species. *It would be reasonable, therefore — perhaps inevitable — that the study of the functions of mind be founded upon the same principles that are universally encountered in evolution's progression.* Thus buttressed, we should be able to build a bridge between the human mind and all other facets of natural science; moreover, it should provide a broad blueprint of *why* the mind engages in the functions it does, as well as what its essential *purposes* may be, such as pursuing parental affection and protection, exploring the rationale and patterns of sexual mating, and specifying the styles of social communication and abstract language (see Barkow, Cosmides, & Tooby, 1996; Simpson & Kenrick, 1996).

From Phylogeny of Mind to Ontogeny of Personality

A few additional words should be said concerning analogies between evolution and ecology on the one hand and personality on the other. During its life history (see Horn & Rubenstein, 1984), an organism develops an assemblage of traits that contribute to its individual survival and reproductive success, the two essential components of fitness formulated by Darwin. Such assemblages, termed *complex adaptations* and *strategies* in the literature of evolutionary ecology, are close biological equivalents of what psychologists have conceptualized as personality styles and structures. In biology, explanations of a life history strategy of adaptations refer primarily to biogenic variations among constituent traits, their overall covariance structure, and the nature and ratio of favorable to unfavorable ecological resources that have been available for purposes of extending longevity and optimizing reproduction. Such explanations are not appreciably different from those used to account for the development of personality styles or functions.

Bypassing the usual complications of analogies, a relevant and intriguing parallel may be drawn between the phylogenic evolution of a species' genetic composition and the ontogenic development of an individual organism's adaptive strategies (i.e., its personality style). At any point in time, a species possesses a limited set of genes that serve as trait potentials. Over succeeding generations, the frequency distribution of these genes will likely change in their relative proportions depending on how well the traits they undergird contribute to the species' "fittedness" within its varying ecological habitats. In similar fashion, individual organisms begin life with a limited subset of their species' genes and the trait potentials they subserve. Over time the *salience* of these trait potentials — not the proportion of the genes themselves — will become differentially prominent as the organism interacts with its environments. It "learns" from these experiences which of its traits "fit" best (i.e., most optimally suit its ecosystem). In phylogenesis, then, *actual gene frequencies* change during the generation-to-generation adaptive process, whereas in ontogenesis it is the *salience* or prominence of gene-based traits that changes as adaptive learning occurs. Parallel evolutionary processes unfold: one within the life of a species; the other within the life of an organism. What is seen in the individual organism is a shaping of latent potentials into adaptive and manifest styles of perceiving, thinking, feeling, acting, and relating to others; these distinctive ways of adaptation, engendered by the interaction of biological endowment and sociocultural experience, comprise the elements of what is termed *personality styles*. It is a formative process in a single lifetime that parallels gene redistributions among species during their evolutionary history.

The Interdisciplinary Convergence of Evolutionary Ecology, Neuroscience, and Political Personology

Over the past decade and more, the second author (Millon, 1990, 1996, 2003) has endeavored to build a clinical science of personology founded upon universal evolutionary and ecological foundations informed by parallel developments in the more mature adjacent sciences, most notably evolutionary ecology and neuroscience. The first author (Immelman, 1993, 1998, 2002, 2003), mirroring Marcus's (2002) concerns noted in the opening paragraphs of this paper, has attempted to transpose these contemporary insights from the *source* discipline of clinical science to the *target* discipline of political personality and leadership.

To provide a conceptual background and furnish a rudimentary, though generative, model of personality and personality-based leadership styles, three interacting domains or spheres of evolutionary and ecological principles are detailed in this paper. Table 1 presents a taxonomy of politically relevant personality patterns derived from these principles, congruent with Axis II of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*; American Psychiatric Association, 1994).

Table 1

***Taxonomy of Politically Relevant Personality Patterns:
Millon Inventory of Diagnostic Criteria***

Scale 1A:	Dominant pattern a. Asserting b. Controlling c. Aggressive (Sadistic; <i>DSM-III-R</i> , Appendix A)
Scale 1B:	Dauntless pattern a. Adventurous b. Dissenting c. Aggrandizing (Antisocial; <i>DSM-IV</i> , 301.7)
Scale 2:	Ambitious pattern a. Confident b. Self-serving c. Exploitative (Narcissistic; <i>DSM-IV</i> , 301.81)
Scale 3:	Outgoing pattern a. Congenial b. Gregarious c. Impulsive (Histrionic; <i>DSM-IV</i> , 301.50)
Scale 4:	Accommodating pattern a. Cooperative b. Agreeable c. Submissive (Dependent; <i>DSM-IV</i> , 301.6)
Scale 5A:	Aggrieved pattern a. Unpresuming b. Self-denying c. Self-defeating (<i>DSM-III-R</i> , Appendix A)
Scale 5B:	Contentious pattern a. Resolute b. Oppositional c. Negativistic (Passive-aggressive; <i>DSM-III-R</i> , 301.84)
Scale 6:	Conscientious pattern a. Respectful b. Dutiful c. Compulsive (Obsessive-compulsive; <i>DSM-IV</i> , 301.4)
Scale 7:	Reticent pattern a. Circumspect b. Inhibited c. Withdrawn (Avoidant; <i>DSM-IV</i> , 301.82)
Scale 8:	Retiring pattern a. Reserved b. Aloof c. Solitary (Schizoid; <i>DSM-IV</i> , 301.20)
Scale 9:	Distrusting pattern d. Suspicious e. Paranoid (<i>DSM-IV</i> , 301.0)
Scale 0:	Erratic pattern d. Unstable e. Borderline (<i>DSM-IV</i> , 301.83)

Note. Equivalent *DSM* terminology and codes are specified in parentheses.

The work of several prominent scholars at the interface of personality and neuroscience relates to the three polar dimensions of existence, adaptation, and replication, albeit indirectly and partially (see Table 2). For example, a modern conception anchored to biological foundations has been developed by the distinguished British psychologist Jeffrey Gray (1964, 1973, 1975, 1991). A three-part model of temperament, matching the three-part polarity model in most respects, has been formulated by the American psychologists Arnold Buss and Robert Plomin (A. H. Buss & Plomin, 1975, 1984). Deriving inspiration from a sophisticated analysis of neuroanatomical substrates, the highly resourceful American psychiatrist Robert Cloninger (1986, 1987) has deduced a threefold schema that is coextensive with major elements of the present model's three polarities. A detailed review of these and other parallels has been presented in several recent books by the second author (e.g., Millon, 1990, 1996). For the purpose of elucidating the neurobiological substrates of the personality patterns — and, potentially, leadership styles — derived from the three universal polarities of evolution, we will focus on the contributions of Gray and Cloninger.

Aims of Existence: The Pain–Pleasure Polarity

The two-dimensional (i.e., two linearly independent vectors) pain–pleasure polarity (Millon, 1990, pp. 51–64; 2003, pp. 9–14) is conceptualized in terms of, respectively, life enhancement (pleasure seeking) and life preservation (pain avoidance): “acts that are attracted to what we experientially record as pleasurable events (positive reinforcers) ... [versus] behaviors oriented to repel events experientially characterized as painful (negative reinforcers)” (Millon, 2003, p. 10). It appears highly likely that pleasure seeking and pain avoidance are dissociable and under separate neural control (Gray, 1991). The recurrence of this two-dimensional polarity of existence in diverse psychological domains (e.g., learned behaviors, unconscious processes, and emotion and motivation, as well as their biological substrates) has been elaborated elsewhere (Millon, 1990, pp. 51–64).

Neurobiological Substrates of the Life-Preservation Attribute

Gray (1975) has posited two systems serving as biological substrates of pain signals, both of which alert the organism to possible dangers in the environment. Those mediating the behavioral effects of unconditioned (instinctive?) aversive events are termed the *fight–flight system* (FFS). This system elicits defensive aggression and escape and is subserved, according to Gray's pharmacological inferences, by the amygdala, the ventromedial hypothalamus, and the central gray of the midbrain; neurochemically, evidence suggests a difficult-to-unravel interaction among aminobutyric acids (e.g., gamma-aminobutyric acid, GABA), serotonin, and endogenous opiates (e.g., beta-endorphins). The second major source of sensitivity and action in response to pain signals is referred to by Gray as the *behavioral inhibition system* (BIS), consisting of the interplay of the septal–hippocampal system, its cholinergic projections and monoamine transmissions to the hypothalamus, and then on to the cingulate gyrus and prefrontal cortex. Activated by signals of punishment or nonreward, the BIS suppresses associated behaviors or brings about avoidance behaviors, refocuses the organism's attention, and redirects activity toward alternate stimuli.

Table 2

Three Domains of Evolution and Parallel Neurobiological Personality Dimensions

Aims of Existence: Pain–Pleasure Polarity		Modes of Adaptation: Passive–Active Polarity		Strategies of Replication: Other–Self Polarity	
Life preservation	Life enhancement	Ecologically accommodating	Ecologically modifying	Other-nurturing	Self-enhancing
behavioral inhibition system (BIS) (Gray, 1975)	behavioral activation system (BAS) (Gray, 1975)	behavioral inhibition system (BIS) (Gray, 1975)	behavioral activation system (BAS) (Gray, 1975)		
fight-flight system (FFS) (Gray, 1964)		nonsensation seeking (Gray, 1964)	sensation seeking (Gray, 1964; Zuckerman, 1999)		
harm avoidance (HA) (Cloninger, 1986, 1987)	reward dependence (RD) (Cloninger, 1986, 1987)				
	novelty seeking (NS) (Cloninger, 1986, 1987)		novelty seeking (NS) (Cloninger, 1986, 1987)		
negative emotionality (NE) (Clark & Watson, 1999)	positive emotionality (PE) (Clark & Watson, 1999)	constraint (DvC) (Clark & Watson, 1999)	disinhibition (DVC) (Clark & Watson, 1999)		
fear/aversion (Masters & Sullivan, 1989)	happiness/reassurance (Masters & Sullivan, 1989)				
anxiety (Marcus et al., 2000)	enthusiasm (Marcus et al., 2000)			affiliation/attachment (Everly, 1988)	autonomy/aggression (Everly, 1988)

Cloninger's (1986, 1987) notion of *harm avoidance* (HA) is also congruent with the evolutionary attribute of life preservation. As Cloninger conceives the construct, it is a heritable tendency to respond intensely to signals of aversive stimuli (pain) and to learn to inhibit behaviors that might lead to punishment or frustrative nonreward. Those high on this dimension are characterized as cautious, apprehensive, and inhibited; those low on this valence would likely be confident, optimistic, and carefree. Cloninger subscribes essentially to Gray's behavioral inhibition system concept in explicating this polarity, as well as the neuroanatomical and neurochemical hypotheses Gray proposed as the substrates for its pain-avoidant mechanisms.

Neurobiological Substrates of the Life-Enhancement Attribute

Gray's (1975) neurobiological model references activation and inhibition systems (active-passive polarity) as well as reward and punishment systems (pleasure-pain polarity). Basing his deductions primarily on pharmacological investigations of animal behavior, Gray has proposed the existence of several interrelated and neuroanatomically grounded response systems that activate various positive and negative affects. He refers to what he terms the *behavioral activation system* (BAS) as an approach system that is subserved by the reward center uncovered originally by Olds and Milner (1954). Ostensibly mediated at brain stem and cerebellar levels, it is likely to include dopaminergic projections across various striata and is defined as responding to conditioned rewarding and safety stimuli by facilitating behaviors that maximize their future recurrence (Gray 1975). There are intricacies in the manner with which the BAS is linked to external stimuli and its anatomic substrates, but Gray currently views it as a system that subserves signals of reward, punishment relief, and pleasure.

Cloninger (1986, 1987) has generated a theoretical model composed of three dimensions, which he terms *reward dependence* (RD), *harm avoidance* (referred to earlier), and *novelty seeking* (NS). The former and the latter are conceptually congruent with the pleasure-seeking polarity. Proposing that each of these dimensions reflects a heritable personality disposition, he relates them explicitly to specific monoaminergic pathways; for example, reward dependence is linked to noradrenergic activity, harm avoidance to serotonergic activity, and novelty seeking to dopaminergic activity. Cloninger's reward dependence dimension reflects variance on the positive-gratifying-pleasure valence, whereas harm avoidance represents variance on the negative-pain-displeasure valence. Reward dependence is hypothesized to be a heritable neurobiological tendency to respond to signals of reward (pleasure), particularly verbal signals of social approval, sentiment, and succor, as well as to resist events that might extinguish behaviors previously associated with these rewards. Cloninger portrays those high on reward dependence as sociable, sympathetic, and pleasant; in contrast, those low on this polarity are characterized as detached, cool, and practical. Describing the undergirding substrate for the reward/pleasure valence as the *behavior maintenance system* (BMS), Cloninger speculates that its prime neuromodulator is likely to be norepinephrine, with its major ascending pathways arising in the pons, projecting onward to hypothalamic and limbic structures, and then branching upward to the neocortex.

Personality Implications of the Pain–Pleasure Polarity

Although the tendency to minimize pain and maximize pleasure is undoubtedly an inherent part of human nature, individual differences in ontogenetic development of adaptive strategies — the shaping of latent potentials into manifest styles of perceiving, thinking, feeling, acting, and relating to others, engendered by the interaction of biological endowment and sociocultural experience — are overtly reflected in distinctive personality styles. *Reticent* (e.g., avoidant; see Table 1 and Millon, 1996, p. 260) personalities display an excessive, pain-avoidant preoccupation with threats to their psychic security — a hyperalertness to signs of potential rejection — that leads these persons pessimistically to disengage from everyday relationships and pleasures. At the other extreme of the pain–pleasure polarity, we find pleasure seeking, *dauntless* (e.g., antisocial; see Table 1 and Millon, 1996, p. 444) personalities with a risk-taking attitude and little countervailing caution and prudence to avoid danger and threat. Somewhat less likely than dauntless personalities to throw caution to the wind are *ambitious* (e.g., narcissistic; see Table 1 and Millon, 1996, pp. 403–404) personalities, who are intermediate on both pain avoidance and pleasure seeking; for them, risk taking is more commonly a function of self-enhancing hubris.

Both *conscientious* (e.g., obsessive-compulsive; see Table 1 and Millon, 1996, pp. 513) and *contentious* (e.g., negativistic; see Table 1 and Millon, 1996, pp. 548–549) personalities are low on the pleasure-seeking polarity, experiencing relatively little joy in existence; they are more driven by self-preservation, though only average on the pain-avoidant polarity, which features less prominently in their adaptive strategy. Introverted, *retiring* (e.g., schizoid; see Table 1 and Millon, 1996, pp. 228–229) personalities are notable for weakness on both the pain-avoidant and pleasure-seeking polarities, thus displaying a distinctively impassive, anhedonic quality.

Some personality patterns, because of characteristic experiential histories, evince marked polarity reversals (see Millon, 1996, pp. 496–498, 597–600). *Aggrieved* (e.g., self-defeating; see Table 1 and Millon, 1996, p. 584) personalities, rather than avoid circumstances that may prove painful and self-endangering, masochistically tend to set in motion situations in which they will come to suffer; in transmuted pain to pleasure, and thus self-inflicting rather than avoiding pain, they display a polarity reversal. *Dominant* (e.g., aggressive; see Table 1 and Millon, 1996, pp. 482–483) personalities exhibit a different kind of polarity reversal; they avoid pain by preemptively imposing or inflicting it on others — a tendency most clearly discernable in the extreme, sadistic variant of the dominant personality pattern. For some types, such as *accommodating* (e.g., dependent; see Table 1 and Millon, 1996, pp. 330–331) and *outgoing* (e.g., histrionic; see Table 1 and Millon, 1996, p. 366) personalities — intermediate on both the life preservation and life enhancement valences — the role of pain avoidance versus pleasure seeking is of minimal consequence with regard to personality adaptation.

The hypothesized valences of the personality patterns catalogued in Table 1, with reference to the three universal evolutionary polarities, are summarized in Table 3.

Table 3

Three Domains of Evolution and Associated Personality Valences

Personality pattern	Aims of Existence: Pain–Pleasure Polarity		Modes of Adaptation: Passive–Active Polarity		Strategies of Replication: Other–Self Polarity	
	Pain	Pleasure	Passive	Active	Other	Self
Dominant	High ¹	Medium	Low	High	Low	Medium
Dauntless	Low	Medium	Low	High	Low	High
Ambitious	Low	Medium	High	Low	Low	High
Outgoing	Medium	Medium	Low	High	High	Low
Accommodating	Medium	Medium	High	Low	High	Low
Aggrieved	High ²	Low	High	Medium	Medium	Low
Contentious	Medium	Low	Medium	High	Low ³	Medium
Conscientious	Medium	Low	High	Low	High ⁴	Low
Reticent	High	Low	Low	High	Medium	Medium
Retiring	Low	Low	High	Low	Low	Medium

1 Polarity reversal

2 Polarity reversal

3 Conflict between polarities

4 Conflict between polarities

Political Implications of the Pain–Pleasure Polarity

The pain–pleasure polarity can be invoked to hypothesize a partial genetic basis for individual differences in ideological (e.g., liberal–conservative) resonance. In evolutionary terms, liberalism can be construed as a primary concern “with improvement in the quality of life” and “behaviors that improve survival chances,” and conservatism as an avoidance of “actions or environments that threaten to jeopardize survival” (Millon & Davis, 2000, p. 58). Thus construed, liberals are motivated to maximize survival by seeking pleasure (life enhancement, or positive reinforcement), whereas conservatives seek to maximize survival by avoiding pain (life preservation, or negative reinforcement). In the context of personality correlates of the pain–pleasure polarity (summarized in the preceding section), evolutionary theory would predict that reticent, conscientious, contentious, and dominant personalities are overrepresented among conservatives, that dauntless, ambitious, and possibly aggrieved personalities are overrepresented among liberals, and that retiring personalities are the least ideological. Furthermore, it would be expected that ideological resonance in accommodating and outgoing personalities is less determined by the pain–pleasure valence than by their strong other–nurturing orientation on the other–self polarity (to be discussed), which predicts liberal resonance.

Data from the Minnesota Twin Study (Bouchard & McGue, 1990; Tellegen, Lykken, Bouchard, Wilcox, Segal, & Rich, 1988) seem to bolster the notion that ideological resonance has a genetic component, with a monozygotic “twin correlation” of .59 for traditionalism, an index of attitudes favoring conservative values. With a heritability estimate in the region of .30,

the heritability of conservative versus liberal attitudes appears to be similar in magnitude to that of the temperamental dispositions studied by A. H. Buss and Plomin (1984), namely activity (.25), sociability (.25), emotionality (.40), and impulsivity (.45). In contrast, the heritability estimate for other politically relevant attitudes, such as attitudes toward religion and racial integration, is near zero. (For a provocative evolutionary theory of political ideology, see Miller, 1996.)

Evolutionary theory may also shed new light on an unresolved controversy in political psychology, namely the debate over authoritarianism as fundamentally a rightwing phenomenon versus authoritarianism as an expression of both rightwing and leftwing ideological extremism. Hans Eysenck (1954) proposed a two-factor theory that among its classifications conceptualized fascists as toughminded conservatives, communists as toughminded radicals, and liberals as tenderminded moderates. More consonant with the pain–pleasure polarity, Silvan Tomkins’s (1963) polarity theory posits that people with more humanistic, leftwing ideo-affective postures (or scripts) both express and are more receptive to positive affect, whereas those with more normative rightwing scripts tend to be more responsive to negative affect. Thus, William Stone (1980; Stone & Smith, 1993), a leading critic of “the myth of leftwing authoritarianism,” has argued on empirical grounds that the evidence for leftwing authoritarianism is flawed and that authoritarianism is, in essence, a rightwing phenomenon. To the extent that authoritarianism can be construed as a life-preserving (pain-avoidant), self-enhancing rather than other-nurturing tendency, evolutionary theory lends support to Stone’s position.

In Hermann’s (1987) conceptual scheme, a core belief component shaping a leader’s worldview is nationalism, which emphasizes “the importance of maintaining national honor and dignity” (p. 167). In evolutionary terms, the motivating aim of nationalism clearly is a life-preserving (pain-avoidant) orientation.

The pain–pleasure dimension also provides evolutionary underpinnings for James David Barber’s (1992) fourfold (active/passive \times positive/negative) categorization of presidential character, in which positivity–negativity is described in terms of enjoyment (i.e., positive affect) derived from political office. Positive leaders have a generally optimistic outlook and derive pleasure from the duties of public office, whereas negative leadership has a more pessimistic tone, being oriented toward pain avoidance.

With respect to the neurobiology of temperament, one of the most frequently replicated findings in the past decade or so is the existence of two orthogonal dimensions of emotional response (Marcus et al., 2000). Lee Anna Clark and David Watson’s (1999) dimensions of *Positive Emotionality* (corresponding to Gray’s BAS and Cloninger’s RD) and *Negative Emotionality* (corresponding to Gray’s BIS and Cloninger’s HA) offer a useful template for numerous models proposed in recent years. In political psychology, Marcus and his associates (2000) employ the terms *enthusiasm* and *anxiety* for, respectively, the positive and negative emotional valences. According to Marcus (personal communication, February 16, 2002), Roger Masters’s work (e.g., Masters & Sullivan 1989) on nonverbal displays and political leadership map well onto this model (see Table 2). Specifically, Masters’s happiness/reassurance display corresponds to enthusiasm (positive affect), whereas the fear aspect of fear/aversion maps onto anxiety (negative affect).

Finally, the pain–pleasure polarity suggests a possible evolutionary basis for the three management models proposed by Richard Johnson (1974) and employed by Alexander George and Eric Stern (1998) to classify the policy-making structures and advisory systems favored by recent U.S. presidents:

- *Formalistic* chief executives prefer “an orderly policymaking structure, ... well-defined procedures, hierarchical lines of communication, and a structured staff system” (George & Stern, 1998, p. 203). In evolutionary terms, their motivating aim is to *preserve* life by minimizing pain. In addition to the high-pain/low-pleasure reticent and high-pain/average-pleasure dominant personalities noted earlier, a formalistic management style is likely for contentious and conscientious personalities, both of which are average on pain avoidance, in conjunction with low pleasure seeking (see Table 1 and Millon, 1996, pp. 513, 548–549).
- *Competitive* chief executives encourage “more open and uninhibited expression of diverse opinions, analysis, and advice” and tolerate or encourage “organizational ambiguity, overlapping jurisdictions, and multiple channels of communication to and from the president” (George & Stern, 1998, p. 203). In evolutionary terms, their motivating aim is to *enhance* life by maximizing pleasure. In addition to the high-pleasure/low pain dauntless personality noted earlier, a competitive management style is likely for the ambitious personality, which is average on pleasure seeking, in conjunction with relatively low pain avoidance (see Table 1 and Millon, 1996, pp. 403–404).
- *Collegial* chief executives attempt to benefit from the advantages of both the competitive and formalistic approaches while avoiding their pitfalls. Thus, they strive for “diversity and competition in the policymaking system,” balanced by “encouraging cabinet officers and advisers to identify at least partly with the presidential perspective” and “encouraging collegial participation” (George & Stern, 1998, p. 203). In evolutionary terms, collegial executives are intermediate on both the pleasure-seeking and pain-avoidant dimensions of the pain–pleasure polarity, and strongly other-oriented on the other–self polarity (to be discussed). The accommodating and outgoing personality patterns are noted for being average on both of these dimensions, in conjunction with strong other-directedness (see Table 1 and Millon, 1996, pp. 330–331, 366).

The systematic import (to be discussed) of a generative theory is implicit in the suggestion that Johnson’s (1974) management model fails to account for at least two additional (hypothesized) executive styles: *complex* types high on both the pleasure-seeking and pain-avoidant polarities (e.g., mixed personality types; personalities with polarity reversals, such as aggrieved or dominant types; personality types whose adaptive strategies are defined more by the passive–active and other–self polarities than by the pain–pleasure polarity), and *undifferentiated* types low on both the pleasure-seeking and pain-avoidant polarities (i.e., introverted, retiring personalities).

Modes of Adaptation: The Passive–Active Polarity

The passive–active polarity (Millon, 1990, pp. 64–77; 2003, pp. 14–18) is conceptualized in terms of ecological modification (active) and ecological accommodation (passive); that is, “whether initiative is taken in altering and shaping life’s events or whether behaviors are reactive to and accommodate those events” (Millon, 2003, p. 14). The reader is referred elsewhere (Millon 1990, pp. 64–77) for a detailed discussion of active–passive parallels in wider domains of psychological thought — for example, the “ego apparatuses” formulated by Heinz Hartmann (1939/1958) and the distinction between classical and operant conditioning in the writings of B. F. Skinner (1938, 1953), along with a consideration of the critical role of activation/arousal and its neurobiological substrates in describing affective and motivational states.

Neurobiological Substrates of the Ecologically Accommodating and Ecologically Modifying Attributes.

Neurobiological research has proven to be highly supportive of the activity or arousal construct ever since Papez (1937), Moruzzi and Magnum (1949), and MacLean (1949, 1952) assigned what were to be termed the reticular and limbic systems’ both energizing and expressive roles in the central nervous system. First among historic figures to pursue this theme was Ivan Pavlov. In speaking of the basic properties of the nervous system, Pavlov referred to the strength of the processes of excitation and inhibition, the equilibrium between their respective strengths, and the mobility of these processes. Although Pavlov’s (1927) theoretical formulations dealt with what Donald Hebb (1955) termed a *conceptual nervous system*, his experiments and those of his students led to innumerable direct investigations of brain activity. Central to Pavlov’s thesis was the distinction between strong and weak types of nervous systems — that is, high versus low tolerance and need for stimulation.

Closely aligned to Pavlovian theory, Gray (1964) has asserted that those with a weak nervous system are easily aroused, nonsensation-seeking introverts who prefer to experience low rather than high levels of stimulation. Conversely, those with a strong nervous system would arouse slowly and likely be sensation-seeking extraverts who find low stimulation levels boring and high levels both exciting and pleasant. This assertion is supported by Eysenck’s revised, empirically validated arousal theory of extraversion–introversion (Eysenck & Eysenck, 1985), based on the finding that introverts are more easily aroused (i.e., physiologically reactive) than extraverts, with the implication that they tend to seek lower levels of stimulation than do extraverts. (See also Zuckerman’s later, 1991, work on the relationships among the enzyme monoamine oxidase, neurotransmission, and sensation seeking.)

Akin also to the active modality are the more recent views of Cloninger (1986, 1987). To him, novelty seeking is a heritable tendency toward excitement in response to novel stimuli or cues for reward (pleasure seeking) or punishment relief (pain avoidance), both of which lead to exploratory activity. Consonant with its correspondence to the activity polarity, individuals high in novelty seeking (associated with low levels of dopamine) may be characterized in their personality attributes as impulsive, excitable, and quickly distracted or bored. Conversely, passive individuals at the low end of the novelty-seeking dimension may be portrayed as reflective, stoic, slow-tempered, orderly, and only hesitantly engaged in new interests.

Personality Implications of the Passive–Active Polarity

At the ecologically accommodating end of the passive–active continuum are personality adaptations that exhibit an excess of passivity. Several personality patterns demonstrate this passive style, although their passivity derives from and is expressed in appreciably different ways. *Accommodating* (e.g., dependent; see Table 1 and Millon, 1996, pp. 330–331) personalities display a tendency to wait passively for others to provide nurturance, offer protection, and assume leadership, owing to deficits in confidence, initiative, and autonomous skills. Passivity among *conscientious* (e.g., obsessive-compulsive; see Table 1 and Millon, 1996, pp. 513) personalities stems from their aversion to acting independently, because of intrapsychic resolutions they have made to quell troubling thoughts and emotions generated by their self–other ambivalence. *Ambitious* (e.g., narcissistic; see Table 1 and Millon, 1996, pp. 403–404) personalities presumptuously assume that they are unconditionally entitled to recognition and admiration, and that good things will come their way with little or no effort on their part. *Retiring* (e.g., schizoid; see Table 1 and Millon, 1996, pp. 228–229) personalities are passive because of their relative incapacity to experience pleasure and pain. *Aggrieved* (e.g., self-defeating; see Table 1 and Millon, 1996, p. 584) personalities passively submit to others’ wishes; however, unlike the acquiescence of accommodating types, for aggrieved types submission to suffering represents a measure of personal control in that anguish is perceived as the most desirable alternative among the range of seemingly inescapable options available to them.

At the ecologically modifying end of the passive–active continuum are personality adaptations that exhibit an excess of activity. *Outgoing* (e.g., histrionic; see Table 1 and Millon, 1996, p. 366) personalities epitomize this tendency. These individuals achieve their goals of maximizing protection, nurturance, and reproductive success by energetically engaging in a series of manipulative, seductive, and attention-getting maneuvers. Approval and affection must constantly be replenished and are sought from every interpersonal source. Susceptible to boredom and intolerant of inactivity, they evince a restless, stimulus-seeking quality as they keep stirring up things, fleetingly enthusiastic about one activity after another. Ecological modification in *dominant* (e.g., aggressive; see Table 1 and Millon, 1996, pp. 482–483) personalities is seen in the proactive manner in which they subjugate others (i.e., impose pain). A similarly active polarity focus is seen in *reticent* (e.g., avoidant; see Table 1 and Millon, 1996, p. 260) personalities. The distinctive feature is the reticent personality’s anticipatory escape from pain, which presents as a hypervigilant awareness and active avoidance of situations that portend failure, rejection, denigration, or humiliation. Activity in *contentious* (e.g., negativistic; see Table 1 and Millon, 1996, pp. 548–549) personalities is seen in a perpetual shifting in thoughts, feelings, and behaviors, due to conflict and ambivalence between the self-enhancing and other-nurturing polarities.

Major personality theorists (e.g., Otto Kernberg, 1992) have noted strong similarities between the antisocial and narcissistic personality. The evolutionary model, with its polarity schema, clarifies the central distinctions between the *dauntless* (e.g., antisocial; see Table 1 and Millon, 1996, p. 444) and *ambitious* (e.g., narcissistic) personality patterns. Both patterns are low in pain avoidance and average in pleasure seeking, in conjunction with high self-enhancement and low other-nurturance. The key distinction between these personality patterns appears on the

passive–active dimension: Ecologically accommodating, ambitious, narcissistic personalities, with their characteristic sense of entitlement, assume that good things will come to them with minimal effort personal effort; ecologically modifying, sensation-seeking, dauntless personalities assume the contrary — that they are undervalued and that little will be achieved without considerable effort on their part (including Machiavellian cunning and deception, should such means serve their aggrandizing ends).

Political Implications of the Passive–Active Polarity

The passive–active dimension provides evolutionary underpinnings for Barber’s (1992) fourfold (active/passive × positive/negative) categorization of presidential character, in which activity–passivity is described in terms of energy invested in political office. In evolutionary terms, a passive orientation can be construed as “a tendency to accommodate to a given ecological niche and accept what the environment offers,” whereas an active orientation may be construed as “a tendency to modify or intervene in the environment, thereby adapting it to oneself” (Millon & Davis, 2000, p. 59).

The passive–active dimension also provides an evolutionary basis for Lloyd Etheredge’s (1978) fourfold (high/low dominance × introversion/extraversion) classification of personality-based differences in foreign-policy operating style and role orientation. High-dominance introverts (*bloc* or *excluding* leaders such as Woodrow Wilson and Herbert Hoover) *actively* seek to reshape the world, typically by means of containment policies or by tenaciously advancing a personal vision. High-dominance extraverts (*world* or *integrating* leaders such as Theodore Roosevelt, Franklin D. Roosevelt, John F. Kennedy, and Lyndon B. Johnson) *actively* seek to reshape the world through advocacy and pragmatic leadership on a wide range of foreign-policy fronts. Low-dominance introverts (*maintainers* such as Calvin Coolidge) tend to persevere with the existing order, *passively* pursuing a foreign policy that amounts to “a holding action for the status quo.” Low-dominance extraverts (*conciliators* such as William McKinley, William Taft, Warren Harding, Harry Truman, and Dwight D. Eisenhower), though revealing a preference for *passively* accommodating to existing arrangements, are more flexible and open to change, tending “to respond to circumstances with the sympathetic hope that accommodations can be negotiated” (Etheredge, 1978, pp. 449–450).

Finally, in Hermann’s (1980, 1987) conceptual scheme, a core belief contributing to a leader’s worldview, along with nationalism, is the belief in one’s own ability to control events. In evolutionary terms, a more efficacy-oriented, internal locus of control implies an active-modifying motivating aim, in contrast to a more external locus of control, which suggests a passive-accommodating mode of adaptation. Hermann’s (1987) *expansionist*, *active-independent*, and *influential* orientations are more actively oriented, whereas her *mediator/integrator*, *opportunist*, and *developmental* orientations are more passively oriented. The likely personality correlates of these leadership and policy orientations are easily inferred from the exposition of passive and active modes of adaptation in the preceding section.

Strategies of Replication: The Other–Self Polarity

Somewhat less profound but no less fundamental than the first two polarities, the two-dimensional other–self polarity (Millon, 1990, pp. 77–98; 2003, pp. 18–24) is conceptualized in terms of, respectively, reproductive nurturance (other) and reproductive propagation (self) — a nurturing tendency to value the needs of others, versus an individuating self-orientation that seeks to realize personal potentials before attending to the needs of others (Millon, 1994, p. 6; 2003, pp. 18–19). Evolutionary biologists (e.g., Cole, 1954; Wallen & Schneider, 2000) have recorded marked differences among species in both the cycle and pattern of their reproductive behaviors. Within most animal species an important distinction may be drawn between male and female genders (Daly & Wilson, 1983; Mealey, 2000; Trivers, 1972); it is this latter differentiation that undergirds what has been termed the self- versus other-oriented polarity.

Males lean toward being self-oriented, because their competitive advantages maximize the replication of their genes. Conversely, females lean toward being other-oriented, because their competence in nurturing and protecting their limited progeny maximizes the replication of their genes. The consequence of the male strategy is a broad range of what may be seen as self-oriented behaviors, such as acting in an egotistic, insensitive, inconsiderate, uncaring, and minimally communicative manner. In contrast, the female strategy engenders a disposition to be other-oriented, affiliative, intimate, empathic, protective, communicative, and solicitous (Gilligan, 1982; Rushton, 1985; E. O. Wilson, 1978). It bears note, however, that these conceptually derived self–other extremes do not evince themselves in sharp and distinct gender differences (Hyde, 1996; Mealey, 2000). Such proclivities are matters of degree; consequently, most individuals exhibit intermediate characteristics on this, as well as on the other polarity sets.

The reiteration of the polar dimension of replication in diverse psychological domains (e.g., internal versus external locus of control of reinforcement, self structures versus object relations, and competitive versus cooperative dispositions of motivation, along with the neurobiological substrates of gender) has been elaborated elsewhere (Millon, 1990, pp. 77–98).

Neurobiological Substrates of the Other-Nurturing and Self-Enhancing Attributes

Researchers seeking to identify specific substrates that may relate to the other-oriented polarities have offered intriguing data and ideas. In what has been termed the affiliation/attachment drive, George Everly (1988), for example, has provided evidence favoring an anatomic role for the cingulate gyrus. Referring to the work of Henry and Stephens (1977), MacLean (1985), and Steklis and Kling (1985), Everly concluded that the ablation of the cingulate eliminates both affiliative and grooming behaviors. The proximal physiology of this drive has been hypothesized as including serotonergic, noradrenergic, and opioid neurotransmission systems (Everly 1988; Redmond, Maas, Kling, Graham, & Dekirmenjian, 1971). MacLean (1985) has argued that the affiliative drive may be phylogenically coded in the limbic system and may undergird the concept of family in primates. Indeed, the drive toward other-oriented behaviors — such as attachment, nurturing, affection, reliability, and collaborative play — has been characterized as the “cement of society” by Henry and Stephens (1977); see also Carter, Lederhendler, and Kirkpatrick (1999).

At the self-oriented pole, Everly (1988) has proposed an autonomy/aggression biological substrate that manifests itself in a strong need for control and dominance as well as in hierarchical status striving. Although the evidence remains somewhat equivocal, norepinephrine and dopamine seem to be the prime neurotransmitters of this drive; the hormone testosterone appears similarly implicated (Feldman & Quenzar, 1984; Mazur & Booth, 1998).

Personality Implications of the Other–Self Polarity

In the other-nurturing quadrant of the two-dimensional other–self polarity are personality adaptations that exhibit a distinctively interdependent orientation and an external locus of control. Several personality patterns demonstrate this other-oriented style of self-denial, where self-actualizing autonomy is relinquished in favor of gaining the approbation of others. *Accommodating* (e.g., dependent; see Table 1 and Millon, 1996, pp. 330–331) and *outgoing* (e.g., histrionic; see Table 1 and Millon, 1996, p. 366) personalities have learned that feelings associated with pleasure or the avoidance of pain — that is, their personal sense safety and security — are provided almost exclusively as a function of their relationships with others. Behaviorally, these persons display a strong need for external support (accommodating personalities) and attention (outgoing personalities); when deprived of affection, nurturance, and approval, they experience marked discomfort, if not sadness and anxiety. A centering on the wishes of others and denial of self is also seen in *conscientious* (e.g., obsessive-compulsive; see Table 1 and Millon, 1996, p. 513) personalities. These persons display a picture of social compliance and interpersonal respect; however, beneath the veneer of conformity, they experience an intense desire to assert themselves. Managing this pervasive ambivalence requires rigid psychological controls, which leads to physical tensions that may find periodic relief in abrupt emotional outbursts directed at subordinates. *Aggrieved* (e.g., self-defeating; see Table 1 and Millon, 1996, p. 584) personalities, like conscientious and dependent types, are weak on the self-enhancement polarity; the key distinction is that they are not nearly as strong on other-nurturing, ranking only average on this polarity.

In the self-enhancing quadrant of the two-dimensional other–self polarity are personality adaptations that exhibit a distinctively individualistic orientation and an internal locus of control. In *ambitious* (e.g., narcissistic; see Table 1 and Millon, 1996, pp. 403–404) personalities, psychogenesis reflects the acquisition of a self-image of exceptional worth. Providing self-rewards is highly gratifying if one values oneself or possesses either a real or inflated sense of self-worth. Beneath their manifest confidence and, in more extreme cases, arrogance and an exploitive egocentricity, these individuals believe they already possess what is most important — themselves; thus, they experience primary pleasure simply by passively being or attending to selfish needs, without much thought or even conscious intent, and benignly exploiting others to their own advantage. Although validation of others is both welcome and encouraged, their admirable self-concept requires little confirmation through social approval or, in more extreme cases, genuine accomplishment. *Dauntless* (e.g., antisocial; see Table 1 and Millon, 1996, p. 444) personalities are skeptical about the motives of others, whom they judge to be unreliable, if not disloyal. To counter indifference or the expectation of pain from others, they strive for autonomy; in more extreme cases, they may actively engage in duplicitous behaviors and shamelessly exploit others for self-gain — which, from their strongly self-enhancing perspective,

is simply just revenge for perceived past injustices. *Dominant* (e.g., aggressive; see Table 1 and Millon, 1996, p. 482–483) personalities are similar to ambitious and dauntless types in their weakness on the other-nurturing polarity; the key distinction in replication strategy is that they are considerably less self-enhancing than these types, ranking only average on this polarity. Both *contentious* (e.g., negativistic; see Table 1 and Millon, 1996, pp. 548–549) and *retiring* (e.g., schizoid; see Table 1 and Millon, 1996, pp. 228–229) personalities are weak on the other-nurturing polarity; however, though self-involved, they are not self-enhancing, ranking only average on this polarity. Finally, for some types, such as *reticent* (e.g., avoidant; see Table 1 and Millon, 1996, p. 260) personalities — intermediate on both the self-enhancing and other-nurturing polarities — the role of self versus other is of minimal consequence with regard to personality adaptation.

Political Implications of the Other–Self Polarity

The other–self polarity provides one of the most clear-cut illustrations of the heuristic value of evolutionary theory in politics. Although humans can be both other-encouraging and self-enhancing, most persons will likely tend toward one side or the other. A balance that coordinates the two provides a satisfactory answer to the question of whether one should be devoted to the support and welfare of others (in American politics, the underlying philosophy of the predominantly liberal Democratic Party) or fashion one’s life in accord with one’s own needs and desires (in American politics, the underlying philosophy of the predominantly conservative Republican Party). More specifically, evolutionary theory predicts that in terms of party-political preference, women, in addition to accommodating and outgoing personalities generally (as noted earlier), should disproportionately favor more liberal policy positions and the Democratic Party; men, in contrast, should favor more conservative policies and the Republican Party (cf. Miller, 1996).

With reference to political leadership, three social motives (which in Hermann’s conceptual scheme are postulated to contribute to a leader’s worldview) are thought to play a key role in leader performance: need for power, need for achievement, and need for affiliation (Winter, 1987, 1998). In evolutionary terms, the *need for power*, involving “the desire to control, influence, or have an impact on other persons or groups” (Hermann, 1987, p. 167), suggests a self-enhancing replication strategy, as does the *need for achievement*, which involves “a concern for excellence” and personal accomplishment (Winter, 1998, p. 369). Conversely, the *need for affiliation*, reflecting “concern for establishing, maintaining, or restoring warm and friendly relations with other persons or groups” (Hermann, 1987, p. 167), suggests an other-nurturing replication strategy. Hermann’s (1987) *expansionist*, *active-independent*, and *influential* leadership orientations are more self-oriented, whereas her *mediator/integrator*, *opportunist*, and *developmental* orientations are more other-oriented.

Hermann (1980) also posits two key elements of interpersonal style that, in conjunction with decision style, shape a leader’s personal political style: distrust of others and task orientation (see Hermann, 1987, pp. 163, 167). In evolutionary terms, the *trust–distrust* and *task–relationship* dimensions of leadership are easily reconceptualized as surface manifestations of the other–self polarity.

The two key elements of decision style in Hermann's (1980) framework are *conceptual complexity* and *self-confidence*, which she construes (following Ziller, Stone, Jackson, & Terbovic, 1977), as jointly determinative of "how ideological or pragmatic a political leader will be" (Hermann, 1987, p. 164). Stone and Baril (1979), elaborating on the findings of Ziller et al. (1977), used self–other orientation as a conceptual basis for postulating two distinctive political prototypes, each having a different motivational base. The *pragmatist* — akin to Barber's (1965) active–negative Advertiser — is motivated by power seeking to compensate for low self-esteem (as anticipated by Harold Lasswell, 1948), being driven by self-enhancement and self-promotion. The second political personality type, the *ideologue* — akin to Barber's (1965) active–positive Lawmaker — is more other-oriented, apparently having a sincere interest in good legislation (defined as either pursuing ideological goals or as serving a constituency). Stone and Baril's (1979) construal of self- and other-oriented political personality types, in concert with Barber's (1965, 1992) scheme, lends empirical and theoretical support for the utility of the other–self polarity in an overarching theory of political personality and performance.

The likely personality correlates of these leadership and policy orientations are readily inferred from the exposition of other-nurturing and self-enhancing strategies of replication in the preceding section.

Conclusion

Of all the attribute domains we consider critical for assessing and describing personality across the entire matrix of the person — the behavioral domains of expressive behavior and interpersonal conduct; the phenomenological domains of cognitive style, self-image, and object representations; the intrapsychic domains of regulatory mechanisms and morphological organization; and the biophysical domain of mood/temperament (Clark & Watson, 1999; Immelman, 1993, 2003; Millon, 1990, 1996) — mood/temperament emerges as the personological domain most firmly rooted in neurobiology. This is hardly surprising, given that mood/temperament is situated at the biophysical level of analysis (see Immelman, 2003, p. 611; Millon, 1996, p. 138).

From a neuroscientific perspective, temperament — and emotion more generally — clearly comprises the core of personality inquiry. Anticipating the inception of political psychology as an organized discipline in 1978, International Society of Political Psychology (ISPP) founder Jeanne Knutson called for greater recognition of *The Human Basis of the Polity* (1972). That goal having been achieved, political-psychological inquiry in the third decade of the ISPP, and beyond, will increasingly zero in on the affective bases of political cognition and behavior. Correspondingly, in the currently emerging postcognitive era it would be a grave mistake for personality-in-politics inquiry to ignore the neurobiological and evolutionary foundations of political personality and leadership.

References

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Barber, J. D. (1965). *The lawmakers: Recruitment and adaptation to legislative life*. New Haven, CT: Yale University Press.
- Barber, J. D. (1992). *The presidential character: Predicting performance in the White House* (4th ed.). Englewood Cliffs, NJ: Prentice Hall.
- Barkow, J. H., Cosmides, L., & Tooby, J. (Eds.). (1996). *The adapted mind: Evolutionary psychology and the generation of culture*. New York: Oxford University Press.
- Bouchard, T. J., Jr., & McGue, M. (1990). Genetic and rearing environmental influences on adult personality: An analysis of adopted twins reared apart. *Journal of Personality*, 58(1), 263–292. <https://doi.org/10.1111/j.1467-6494.1990.tb00916.x>
- Buss, A. H., & Plomin, R. (1975). *A temperament theory of personality development*. New York: Wiley.
- Buss, A. H., & Plomin, R. (1984). *Temperament: Early developing personality traits*. Hillsdale, NJ: Erlbaum.
- Buss, D. M. (1991). Evolutionary personality psychology. *Annual Review of Psychology*, 42, 459–491. <https://doi.org/10.1146/annurev.ps.42.020191.002331>
- Buss, D. M. (1999). Human nature and individual differences: The evolution of human personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 31–56). New York: Guilford.
- Carter, C. S., Lederhendler, I. I., & Kirkpatrick, B. (Eds.). *The integrative neurobiology of affiliation*. Cambridge, MA: MIT Press.
- Clark, L. A., & Watson, D. (1999). Temperament: A new paradigm for trait psychology. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 399–423). New York: Guilford.
- Cloninger, C. R. (1986). A unified biosocial theory of personality and its role in the development of anxiety states. *Psychiatric Developments*, 3, 167–226.
- Cloninger, C. R. (1987). A systematic method for clinical description and classification of personality variants: A proposal. *Archives of General Psychiatry*, 44(6), 573–588. <https://doi.org/10.1001/archpsyc.1987.01800180093014>

- Cole, L. C. (1954). The population consequences of life history phenomena. *Quarterly Review of Biology*, 29(2), 103–137. <https://doi.org/10.1086/400074>
- Daly, M., & Wilson, M. (1983). *Sex, evolution, and behavior* (2nd ed.). Boston: Willard Grant Press.
- Davies, J. C. (1973). From where and where to? In J. N. Knutson (Ed.), *Handbook of political psychology* (pp. 1–27). San Francisco: Jossey-Bass.
- Etheredge, L. S. (1978). Personality effects on American foreign policy, 1898–1968: A test of interpersonal generalization theory. *American Political Science Review*, 72(2), 434–451.
- Everly, G. S., Jr. (1988, August). *The biological basis of personality: The contribution of paleocortical anatomy and physiology*. Paper presented at the First International Congress on Disorders of Personality. Copenhagen, Denmark.
- Eysenck, H. J. (1954). *The psychology of politics*. London: Routledge.
- Eysenck, H. J., & Eysenck, M. W. (1985). *Personality and individual differences: A natural science approach*. New York: Plenum Press.
- Feldman, R., & Quenzar, L. (1984). *Fundamentals of neuropharmacology*. Sunderland, MA: Sinauer.
- Gangestad, S., & Snyder, M. (1985). “To carve at its joints”: On the existence of discrete classes in personality. *Psychological Review*, 92(3), 317–349. <https://doi.org/10.1037/0033-295X.92.3.317>
- George, A. L., & Stern, E. (1998). Presidential management styles and models. In A. L. George & J. L. George, *Presidential personality and performance* (pp. 199–280). Boulder, CO: Westview Press.
- Gilligan, C. (1982). *In a different voice: Psychological theory and women’s development*. Cambridge, MA: Harvard University Press.
- Gray, J. A. (1964). Strength of the nervous system as a dimension of personality in man (pp. 157–287). In J. A. Gray (Comp., Ed., and Trans.), *Pavlov’s typology: Recent theoretical and experimental developments from the laboratory of B. M. Teplov*. New York: Macmillan/Pergamon Press.
- Gray, J. A. (1973). Causal theories of personality and how to test them. In J. R. Royce (Ed.), *Multivariate analysis and psychological theory* (pp. 409–463). New York: Academic Press.
- Gray, J. A. (1975). *Elements of a two-process theory of learning*. New York: Academic Press.

- Gray, J. A. (1991). The neuropsychology of temperament. In J. Strelau & A. Angleitner (Eds.), *Explorations in temperament: International perspectives on theory and measurement* (pp. 105–128). New York: Plenum Press.
- Greenstein, F. I. (1969). *Personality and politics: Problems of evidence, inference, and conceptualization*. Chicago: Markham.
- Greenstein, F. I. (1987). *Personality and politics: Problems of evidence, inference, and conceptualization* (New ed.). Princeton, NJ: Princeton University Press.
- Greenstein, F. I. (1992). Can personality and politics be studied systematically? *Political Psychology*, 13, 105–128.
- Hartmann, H. (1958). *Journal of the American Psychoanalytic Association monograph series: Vol. 1. Ego psychology and the problem of adaptation* (D. Rapaport, Trans.). New York: International Universities Press, Inc. (Original work published 1939)
<https://doi.org/10.1037/13180-000>
- Hebb, D. O. (1955). Drives and the C.N.S. (conceptual nervous system). *Psychological Review*, 62(4), 243–254. <https://doi.org/10.1037/h0041823>
- Hempel, C. G. (1965). *Aspects of scientific explanation*. New York: Free Press.
- Henry, J. P., & Stephens, P. (1977). *Stress, health, and the social environment*. New York: Springer-Verlag.
- Hermann, M. G. (1974). Leader personality and foreign policy behavior. In J. N. Rosenau (Ed.), *Comparing foreign policies: Theories, findings, and methods* (pp. 201–234). New York: Wiley/Sage-Halsted.
- Hermann, M. G. (1980). Explaining foreign policy behavior using the personal characteristics of political leaders. *International Studies Quarterly*, 24(1), 7–46.
<https://doi.org/10.2307/2600126>
- Hermann, M. G. (1987). Assessing the foreign policy role orientations of sub-Saharan African leaders. In S. G. Walker (Ed.), *Role theory and foreign policy analysis* (pp. 161–198). Durham, NC: Duke University Press.
- Horn, H. S., & Rubenstein, D. I. (1984). Behavioural adaptations and life history. In J. R. Krebs & N. B. Davies (Eds.), *Behavioural ecology: An evolutionary approach* (2nd ed., pp. 279–298). Sunderland, MA: Sinauer.
- Hyde, J. S. (1996). Where are the gender differences? Where are the gender similarities? In D. M. Buss & N. M. Malamuth (Eds.), *Sex, power, conflict: Evolutionary and feminist perspectives* (pp. 107–118). New York: Oxford University Press.

- Immelman, A. (1993). The assessment of political personality: A psychodiagnostically relevant conceptualization and methodology. *Political Psychology*, 14(4), 725–741. <https://doi.org/10.2307/3791383>
- Immelman, A. (1998). The political personalities of 1996 U.S. presidential candidates Bill Clinton and Bob Dole. *The Leadership Quarterly*, 9(3), 335–366. [https://doi.org/10.1016/S1048-9843\(98\)90035-2](https://doi.org/10.1016/S1048-9843(98)90035-2)
- Immelman, A. (2002). The political personality of U.S. president George W. Bush. In L. O. Valenty & O. Feldman (Eds.), *Political leadership for the new century: Personality and behavior among American leaders* (pp. 81–103). Westport, CT: Praeger.
- Immelman, A. (2003). Personality in political psychology. In I. B. Weiner (Series Ed.), T. Millon & M. J. Lerner (Vol. Eds.), *Handbook of psychology: Vol. 5. Personality and social psychology* (pp. 599–625). Hoboken, NJ: Wiley. <https://doi.org/10.1002/0471264385.wei0524>
- Johnson, R. T. (1974). *Managing the White House: An intimate study of the presidency*. New York: Harper & Row.
- Kenrick, D. T. (1994). Evolutionary social psychology: From sexual selection to social cognition. *Advances in Experimental Social Psychology*, 26, 75–121. [https://doi.org/10.1016/S0065-2601\(08\)60152-5](https://doi.org/10.1016/S0065-2601(08)60152-5)
- Kernberg, O. F. (1992). *Aggression in personality disorders and perversions*. New Haven, CT: Yale University Press.
- Knutson, J. N. (1972). *The human basis of the polity: A psychological examination of political men*. Chicago: Aldine-Atherton.
- Kuhn, T. S. (1970). *The structure of scientific revolutions* (2nd ed.). Chicago: University of Chicago Press.
- Lasswell, H. D. (1948). *Power and personality*. New York: W. W. Norton.
- MacLean, P. D. (1949). Psychosomatic disease and the “visceral brain”; recent developments bearing on the Papez theory of emotion. *Psychosomatic Medicine*, 11, 338–353. <https://doi.org/10.1097/00006842-194911000-00003>
- MacLean, P. D. (1952). Some psychiatric implications of physiological studies on frontotemporal portion of limbic system (visceral brain). *Electroencephalography and Clinical Neurophysiology*, 4(4), 407–418. [https://doi.org/10.1016/0013-4694\(52\)90073-4](https://doi.org/10.1016/0013-4694(52)90073-4)
- MacLean, P. D. (1985). Brain evolution relating to family, play, and the separation call. *Archives of General Psychiatry*, 42(4), 405–417. <https://doi.org/10.1001/archpsyc.1985.01790270095011>

- Marcus, G. E. (1988). The structure of emotional response: 1984 presidential candidates. *American Political Science Review*, 82(3), 737–761. <https://doi.org/10.2307/1962488>
- Marcus, G. E. (2002). Political psychology: A personal view. In K. R. Monroe (Ed.), *Political psychology* (pp. 95–106). Mahwah, NJ: Erlbaum.
- Marcus, G. E., & MacKuen, M. (1993). Anxiety, enthusiasm, and the vote: The emotional underpinnings of learning and involvement during presidential campaigns. *American Political Science Review*, 87(3), 688–701.
- Marcus, G. E., Neuman, W. R., & MacKuen, M. (2000). *Affective intelligence and political judgment*. Chicago: University of Chicago Press.
- Masters, R. D., & Sullivan, D. G. (1989). Nonverbal displays and political leadership in France and the United States. *Political Behavior*, 11(2), 123–156. <https://doi.org/10.1007/BF00992491>
- Mazur, A., & Booth, A. (1998). Testosterone and dominance in men. *Behavioral and Brain Sciences*, 21(3), 353–397 (article: 353–363; open peer commentary and authors' response: 363–390). <https://doi.org/10.1017/S0140525X98001228>
- Mealey, L. (2000). *Sex differences: Development and evolutionary strategies*. New York: Academic Press.
- Miller, G. F. (1996). Political peacocks. *Demos Quarterly*, Issue 10, pp. 21–29.
- Millon, T. (1990). *Toward a new personology: An evolutionary model*. New York: Wiley.
- Millon, T. (with Weiss, L. G., Millon, C. M., & Davis, R. D.). (1994). *Millon Index of Personality Styles manual*. San Antonio, TX: Psychological Corporation.
- Millon, T. (with Davis, R. D.). (1996). *Disorders of personality: DSM-IV and beyond* (2nd ed.). New York: Wiley.
- Millon, T. (2003). Evolution: A generative source for conceptualizing the attributes of personality. In I. B. Weiner (Series Ed.), T. Millon & M. J. Lerner (Vol. Eds.), *Handbook of psychology: Vol. 5. Personality and social psychology* (pp. 3–30). Hoboken, NJ: Wiley.
- Millon, T., & Davis, R. D. (2000). *Personality disorders in modern life*. New York: Wiley.
- Morey, L. C. (1985). An empirical comparison of interpersonal and DSM-III approaches to classification of personality disorders. *Psychiatry: Journal for the Study of Interpersonal Processes*, 48(4), 358–364. <https://doi.org/10.1080/00332747.1985.11024296>

- Moruzzi, G., & Magnum, H. W. (1949). Brain stem reticular formation and activation of the EEG. *Electroencephalography and Clinical Neurophysiology*, 1(4), 455–473. <https://doi.org/10.1176/jnp.7.2.251>
- Northrop, F. S. C. (1947). *The logic of the sciences and the humanities*. New York: Macmillan.
- Olds, J., & Milner, P. (1954). Positive reinforcement produced by electrical stimulation of septal area and other regions of rat brain. *Journal of Comparative and Physiological Psychology*, 47(6), 419–427. <https://doi.org/10.1037/h0058775>
- Papez, J. W. (1937). A proposed mechanism of emotion. *Archives of Neurology and Psychiatry*, 38(4), 725–743. <https://doi.org/10.1001/archneurpsyc.1937.02260220069003>
- Pavlov, I. P. (1927). *Conditioned reflexes* (G. V. Anrep, Trans.). London: Oxford University Press.
- Redmond, D. E., Jr., Maas, J. W., Kling, A., Graham, C. W., & Dekirmenjian, H. (1971). Social behavior of monkeys selectively depleted of monoamines. *Science*, 174(4007), 428–431. <https://doi.org/10.1126/science.174.4007.428>
- Rushton, J. P. (1985). Differential K theory: The sociobiology of individual and group differences. *Personality and Individual Differences*, 6(4), 441–452. [https://doi.org/10.1016/0191-8869\(85\)90137-0](https://doi.org/10.1016/0191-8869(85)90137-0)
- Simpson, J. A., & Kenrick, D. T. (Eds.). (1996). *Evolutionary social psychology*. Hillsdale, NJ: Erlbaum.
- Skinner, B. F. (1938). *The behavior of organisms: An experimental analysis*. New York: Appleton-Century-Crofts.
- Skinner, B. F. (1953). *Science and human behavior*. New York: Macmillan.
- Steklis, H. D., & Kling, A. S. (1985). Neurobiology of affiliative behavior in nonhuman primates. In M. Reite & T. Field (Eds.), *The psychobiology of attachment and separation* (pp. 93–134). New York: Academic Press.
- Stone, W. F. (1980). The myth of left-wing authoritarianism. *Political Psychology*, 2(3/4), 3–19. <https://doi.org/10.2307/3790998>
- Stone, W. F., & Baril, G. L. (1979). Self–other orientation and legislative behavior. *Journal of Personality*, 47(1), 162–176. <https://doi.org/10.1111/j.1467-6494.1979.tb00620.x>
- Stone, W. F., & Smith, L. D. (1993). Authoritarianism: Left and right. In W. F. Stone, G. Lederer, & R. Christie (Eds.), *Strength and weakness: The authoritarian personality today* (pp. 144–156). New York: Springer-Verlag.

- Tellegen, A., Lykken, D. T., Bouchard, T. J., Jr., Wilcox, K. J., Segal, N. L., & Rich, S. (1988). Personality similarity in twins reared apart and together. *Journal of Personality and Social Psychology*, 54(6) 1031–1039. <https://doi.org/10.1037/0022-3514.54.6.1031>
- Tomkins, S. S. (1963). Left and right: A basic dimension of ideology and personality. In R. W. White (Ed.), *The study of lives* (pp. 388–411). New York: Atherton.
- Trivers, R. L. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man: 1871–1971* (pp. 136–179). Chicago: Aldine.
- Wallen, K., & Schneider, J. E. (Eds.). (2000). *Reproduction in context: Social and environmental influences on reproductive physiology and behavior*. Cambridge, MA: MIT Press.
- Wilson, D. S. (1994). Adaptive genetic variation and human evolutionary psychology. *Ethology and Sociobiology*, 15(4), 219–235. [https://doi.org/10.1016/0162-3095\(94\)90015-9](https://doi.org/10.1016/0162-3095(94)90015-9)
- Wilson, E. O. (1978). *On human nature*. Cambridge, MA: Harvard University Press.
- Wilson, E. O. (1998). *Consilience: The unity of knowledge*. New York: Knopf.
- Winter, D. G. (1987). Leader appeal, leader performance, and the motive profiles of leaders and followers: A study of American presidents and elections. *Journal of Personality and Social Psychology*, 52(1), 196–202. <https://doi.org/10.1037/0022-3514.52.1.196>
- Winter, D. G. (1998). A motivational analysis of the Clinton first term and the 1996 presidential campaign. *The Leadership Quarterly*, 9(3), 367–376. [https://doi.org/10.1016/S1048-9843\(98\)90036-4](https://doi.org/10.1016/S1048-9843(98)90036-4)
- Ziller, R. C., Stone, W. F., Jackson, R. M., & Terbovic, N. J. (1977). Self–other orientations and political behavior. In M. G. Hermann (Ed.), *A psychological examination of political leaders* (pp. 174–204). New York: Free Press.
- Zuckerman, M. (1991). *Psychobiology of personality*. New York: Cambridge University Press.