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# Evolution and Personality: A New Look at Machiavellianism

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Evolutionary approaches to personality offer novel insights into human behavior and social development. Although evolutionary revelations have long been found in fields as diverse as biology, anthropology, economics, and embryology, to name a few, a growing body of work can be found in psychology in the domains of social, developmental, cognitive, and clinical. Yet, this growing field of "evolutionary psychology" is not of one mind. Some refer to it as a revolution in psychology (Buss, 1999) in its inspired and righteous pursuit of the psychic unity of mankind (Tooby & Cosmides, 1990). Others (e.g., Hogan, 1998; Scher & Rauscher, 2003; Wilson, 2003) are concerned that the most vocal "evolutionary psychologists" are narrow in both their views and questions and, moreover, overestimate the originality of evolutionary reasoning to human behavior.

An example of this growing dissent over the standing of evolutionary psychology as its own unified domain is the disagreement about the relation between individual differences and human evolution. That is, do personality characteristics represent insignificant noise, variability in adaptation to local conditions, or variegated genetically encoded morphs? This chapter explores these three views and exemplifies the application of evolutionary theory to human personality with a new approach to Machiavellianism (Hawley, 1999). Additionally, this chapter highlights the need for explicitly considering contextual variables and interpersonal relationships when discussing adaptive stable behavior patterns (i.e., traits).

## EVOLUTIONARY VIEWS ON INDIVIDUAL DIFFERENCES

### Nonessential Noise

How can evolution by natural selection account for individual differences? One argument suggests that there would be no variability in the population if a trait was

adaptive (Tooby & Cosmides, 1990). Indeed, one commonly accepted criterion for winning the label of "adaptation" is reliability; that is, does the quality or behavior develop consistently across all members of a species in normal environments and does it perform dependably the functions for which it was designed (Williams, 1966)? From biological perspectives, phenotypic (and thereby genotypic) variability is the raw material on which natural selection acts to homogenize a population or cull less optimal variants in favor of those that foster differential reproductive success (Williams, 1966). Individual differences are thus often considered "noise," which results from nonselective mechanisms such as mutation, recombination, and genetic drift. Accordingly, many evolutionary psychologists focus on species-typical behavior patterns and preferences (e.g., "a universal human nature"; Tooby & Cosmides, 1990, p. 17; but see Mealey, 1995) within domains such as mate selection and standards of physical beauty, with little consideration for individual difference variables (e.g., Cosmides & Tooby, 1995) with the possible exception of broad classifications such as gender, stage in the life span, or socioeconomic status (e.g., Buss, 1994).

*Phenotypic Plasticity.* In so far as personality reflects an individual's unique pattern of traits (e.g., Guilford, 1959), the prevailing evolutionary psychology paradigm (e.g., Tooby and Cosmides, 1990) recognizes that proximally adaptive stable behavior patterns can result from common-to-all gene suites that are differentially triggered by environmental cues (phenotypic plasticity; Wilson, 1994). In terms of "aggressiveness," for example, Tooby and Cosmides argued that every individual in a social group has inherited a complex aggression regulation mechanism (i.e., an adaptation), but with heritable variation in its activation threshold (i.e., nonessential noise). Activation of this "aggression mechanism" may be transitory (states), or may lead to enduring individual differences (traits) if activation conditions persist or if early activations permanently calibrate the system. Calibrations may be set in response to early environmental conditions such as family milieu or parenting variables (e.g., Bowlby, 1969; Draper & Harpending, 1982, 1987; Sulloway, 1996), win–loss experiences in the peer group (Hawley & Little, 1999), and/or in response to physical or behavioral characteristics of the self (e.g., activation threshold may be high in an individual who is small and weak, highly agreeable, or anxious).

Whereas Tooby and Cosmides did not consider these individual differences as adaptations per se in the classic sense, early calibrations can clearly be construed as adaptive responses to present-day environmental contexts. As an example of this process, Draper and Harpending (1982) explored the relation between reproductive strategy and early environmental cues (here, the absence of the father). Their argument rests on the assumption that what is adaptive for the individual is highly dependent not only on genotype, but also on the local environment in which the individual is raised. In the case of an absent father, the developing child may adopt a life history strategy characterized by early onset of sexual maturity and sexual activity, low parental investment, and high aggressiveness. Whereas traditional approaches may consider aggressiveness and sexual impulsivity as "maladjustment," these behaviors may compensate for suboptimal environments characterized by abbreviated life spans, intense competition for few resources, and low paternal investment.

## Frequency-Dependent Selection and Game Theoretic Models

An additional line of reasoning maintains that physical or psychological individual differences may be more significant than nonessential noise and, furthermore, may reflect considerably more than variability in activation threshold (e.g., Wilson, 1994). For example, game theoretic models (e.g., Lewontin, 1961) have been usefully employed to draw inferences about various naturally selected strategies and the conditions under which they would be favored. Such an analysis assumes that payoff outcomes of one player's strategy depends on the strategies employed by the other players in the population. With respect to animal contests, for example, a population of players behaving according to either cautious (Dove) or escalating (Hawk) strategies can achieve a point at which the proportion of players adopting each strategy stabilizes to a population equilibrium (an evolutionary stable composition; Colman, 1999; Maynard Smith, 1974; Maynard Smith & Price, 1973). In other words, if hawks were to flood a population, there is a point at which costly hawk–hawk encounters increase the cost of hawkish behavior beyond its benefits. As a result, the benefits of caution increase, and so too does the relative frequency of doves. The number of hawks and doves thusly fluctuates until the function stabilizes. In more complex scenarios, optimal strategies may be "mixed" rather than "pure"; that is, overall payoffs may be maximized if a player flexibly responds to the behavior of its competitor as well as to the player's own win–loss history (e.g., pursue if a win is likely, defer if it is not). It should be noted that "strategy" is used in the sense of life history strategy and as such need not imply conscious calculation or forethought on the part of the behaving organism.

Game theoretic models have demonstrated that the fitness of any phenotype (and underlying genotype) depends on the phenotypic composition of the population (hence, *frequency-dependent selection*). In contrast to traditional models of natural selection that pit individual against nature, frequency-dependent selection highlights the behavioral variability expected in a population arising as a response to the behavior of others. Such models furthermore suggest that strategies that appear suboptimal (e.g., escalation) may in fact lead to optimal payoffs depending on other strategies adopted in the group.

Frequency-dependent selection, more so than the phenotypic plasticity model, views sociality as a stream of competitive contests and behavior as inherently strategic: Individuals strive to maximize gains in the presence of others who are also attempting to do so. Frequency-dependent selection permits variegated behavioral phenotypes to coexist and, moreover, to have correspondingly distinct genotypes. But frequency-dependent selection and phenotypic plasticity models need not be mutually exclusive; strategies can feasibly be calibrated by environmental cues that carry information about important aspects of the competitive landscape. As a theoretical example, parenting styles together with early experiences with competitive contests with peers may effectively communicate to the developing "player": "The world is full of hawks and doves. To thrive, it is best to play both." Deciding what to do under what conditions is the topic of the next section, the social function of intellect and Machiavellian intelligence.

## THE SOCIAL FUNCTION OF INTELLECT AND MACHIAVELLIAN INTELLIGENCE

The evolution of intelligence has been the source of controversy and discussion for several decades. Traditional models (i.e., pre-1970s) focused primarily on problem solving, creativity, and inventiveness (Gallup, 1970; Koehler, 1925). In step with game theoretic models, but developing independently from them, alternate views began to trickle in during the 1960s and 1970s from those studying monkeys and apes (e.g., Humphrey, 1976; Jolly, 1966). These primatological models suggested that the social domain was an equally important, if not more important, contributor to the evolution of primate intelligence. According to Humphrey (1976),

> "social primates are required by the very nature of the system they create and maintain to be calculating beings; they must be able to calculate the consequences of their own behaviour, to calculate the likely behaviour of others, to calculate the balance of advantage and loss—and all this in a context where the evidence on which their calculations are based is ephemeral, ambiguous and liable to change, not least as a consequence of their own actions." (p. 309).

This work and related others gave rise to the notion of *Machiavellian intelligence*, which embodies the idea that the advanced cognitive processes of primates are primarily adaptations to the special complexities of their social lives (e.g., Byrne & Whiten, 1988). The term *Machiavellian* was invoked because self-interested behavior[1] is best pursued by appearing "and, actually, to be merciful, faithful, humane, frank, religious. But he should preserve a disposition which will make a reversal of conduct possible in case the need arises" (Machiavelli, 1513/1966, p. 63).

### Machiavellianism and Psychology

The term *Machiavellianism* was also invoked in psychology in the mid-1960s. Elizabethan literary references likely shaped the way Machiavelli is currently viewed and therefore heavily influenced what is meant when someone is referred to as *Machiavellian*. Shakespeare portrayed the Machiavellian as an unscrupulous villain, a soulless diabolical amoral creature excessively concerned with personal power and glory (see, e.g., *Henry VI, Richard III*). Richard Christie's reading of Machiavelli led him to describe the Machiavellian personality characterized by the lack of concern with conventional morality, emotional detachment from others, and greater concern for the manipulation itself over the goals of the manipulation (i.e., low ideological commitment; Christie, 1970a). Three measurable dimensions resulted; endorsement of deception and manipulation in interpersonal interactions, a cynical view of human nature (seeing others as weak and untrustworthy), and a disregard for conventional morality (Fehr, Samson, & Paulhus, 1992). "High-Machs" are considered to be goal oriented rather than person oriented, and yet often appear to be charming and cool (Christie & Geis, 1970). To a large extent, this conceptualization of Machiavellianism is considered a subclinical manifestation of sociopathy that

[1]Machiavelli was not giving advice about self-serving personal goals per se, but rather goals that would best serve the state under certain circumstances. In this sense, Machiavelli might be considered a group selectionist.

Christie casually observed in contexts rife with highly competent yet ambitious people (e.g., prestigious academic departments; Christie, 1970a).

Despite criticism that this work was largely atheoretical (e.g., Wilson, Near, & Miller, 1996) and the scale itself was weak (i.e., its facets were not highly intercorrelated; Hunter, Gerbin, & Boston, 1982), Christie's initial papers gave rise to a flood of studies relating his published scales to other constructs (e.g., intelligence, emotional sensitivity, underhandedness, internal/external locus of control, achievement motivation, anxiety, occupational choice and success, to name a few; see Christie, 1970b; Fehr et al., 1992; Wilson et al, 1996, for reviews). Aside from the finding that high-Machs are more effective liars than low-Machs (Kraut & Price, 1976), few clear and consistent patterns emerged from this literature. McHoskey and colleagues argued, however, that the most consistent of correlate of Machiavellianism is primary psychopathy, with high-Machs being more likely to be dominant, narcissistic, duplicitous, effectively manipulative, and emotionally shallow, and less likely to be guilt prone and empathetic (e.g., McHoskey, Worzel, & Szyarto, 1998). McHoskey and colleagues additionally described convergences between Machiavellianism and secondary psychopathy where there are positive associations with anxiety and emotional disturbance. Perhaps due to theoretical inadequacies, lack of clear empirical support, or both, one sees few studies on Christie's and Geis's Machiavellianism presently being conducted.

## Integrating Biological and Psychological Views on Machiavellianism

Wilson and colleagues (1996) readdressed and reformulated the Machiavellianism construct into evolutionary terms and suggested reducing it to its key component of manipulation. Applying the logic of game theoretic models, Wilson et al. (1996) aligned Machiavellianism with the willingness to "defect" in multistrategic games (e.g., maximizing payoff for the self at the expense of another in a non-zero sum game). Populations composed of individuals using various strategies would theoretically stabilize after multiple "generations" in terms of the resultant numbers of cooperators and defectors. As already discussed, this frequency-dependent selection can account for the existence of various strategies in populations, even though some strategies in some contexts are clearly not as adaptive as others. Wilson, furthermore, correctly pointed out that Machiavelli's advice entails acting humanely and mercifully while at the same time being ready to behave inconsistently with conventional morality should the need arise. Thus, in terms of game theoretic models, high-Machs may use cooperative and defection strategies more flexibly than others or may be more willing to exploit those using cooperative strategies as a first strike option. Wilson et al. speculated that this willingness to defect or exploit others would lead to faring poorly in long-term interactions because others would avoid further contact after having been exploited. In contrast, low-Machs would be cooperators and as such would outperform high-Machs in contexts calling for coordinated interaction.

Wilson's and Christie's conceptualizations of the Machiavellianism construct differ in important ways. First, Christie's approach is moralistic in that it assumes Machiavellianism—indeed defines Machiavellianism—in terms of amorality and

characteristics deemed undesirable and perhaps even pathological (e.g., manipulating for manipulation's sake). Wilson et al. adopted a more neutral stance and permitted high-Machs to enjoy a certain amount of success due to their behavioral flexibility. Their behavior as such is a competitive strategy and is honestly cooperative until the cost of doing so surpasses some threshold beyond that defection is chosen. Wilson's approach is consistent with the notion of "skill" or social competence and in this respect is in agreement with the perspective presented in this chapter (see also Hawley, 2002, 2003a).

As distinct as these approaches are, they are similar in terms of one limitation. Both constructs comprise several lower order traits or subfacets that may or may not be highly related. For Christie's Machiavellianism, this amalgamation has led to the curious situation that his construct is related to both high and low anxiety (McHoskey et al., 1998). For Wilson's approach, it is not clear what a measurement scale might look like. If being high on Machiavellianism implies behavioral flexibility and the willingness to defect and cooperate, then what is "scoring" low on this scale? Wilson suggested low Machiavellianism is distinguished by the tendency to cooperate only, a characterization that appears to assume that two behavioral morphs exist at opposite ends on some unidimensional scale (cooperation and defection). One can also imagine a low-Mach defecting only or neither cooperating nor defecting (a combination not considered from strictly game theoretic framings). In the latter case, those scoring low on Machiavellianism would not pursue personal goals but would instead defer repeatedly to others regardless of the strategy encountered. In contrast, various combinations of cooperation, coercion, and deference have been addressed by resource control theory.

## Resource Control Theory

Resource control theory (Hawley, 1999) draws heavily on the work of evolutionary thinkers (e.g., Charlesworth, 1996; Trivers, 1971) and embraces the concepts of life history strategy (discussed earlier) and the dualism intrinsic to human functioning (e.g., balancing egoistic desires with needs of others; Bakan, 1966; Freud, 1930). From this perspective, goal attainment is a fundamental if not universal human value (e.g., effectance motivation, White, 1959; competence, Deci & Ryan, 1985). From an evolutionary standpoint, many goals include the acquisition of material resources and status (the two presumably being strongly intertwined; see also Hogan, 1983, and Wright, 2000). Consistent with game theoretic perspectives, various strategies of resource control presumably emerged and persist in human social groups. Some of these strategies, like the aggressive hawk strategy, are agonistic and aversive to others (i.e., coercive strategies of resource control; taking, threatening, deceiving). Prosocial strategies, in contrast, gain access to resources indirectly via reciprocity, cooperation, and friendship formation (Charlesworth, 1996; Trivers, 1971; Wright, 2000).

The relative employments of prosocial and coercive strategies of resource control are a source of important individual differences, and presumably derive from different sources intrinsic to the individual. For example, the ability and motivation to employ prosocial strategies conceivably are associated with an affinity toward others, interpersonally attractive characteristics such as agreeableness, and, because material rewards are not instantaneous with prosocial strategies, a degree of impulse con-

trol. In contrast, coercive strategies would be expected in those with less ability to delay gratification, a more negative approach to others (e.g., hostility), and a willingness to engage in aversive behaviors (e.g., aggression). In fact, these individual difference variables may very well underlie strategy employment (Hawley, 1999).

How would individual differences in these strategic proclivities in principle emerge and persist over time? It would happen in the same way other personality characteristics arise and maintain. That is, individuals come into the world with the above referenced temperament orientations, which, evidence suggests, may be heritable (e.g., Emde et al., 1992; Plomin et al., 1993). A child's environment plays an important role as well. Environmental contingencies, parenting practices, and sibling and peer relationships all presumably influence the degree to which behavioral strategies emerge and solidify (Bowlby, 1969; Harris, 1995; Patterson & Dishion, 1985; Sulloway, 1996). It is well known that the family constellation is a training ground for aggressive as well as prosocial orientations (Howes & Eldredge, 1985; Patterson, Littman, & Bricker, 1967; Zahn-Waxler, Radkey-Yarrow, & King, 1979) and peers reward some strategies whereas other strategies are punished or prove to be ineffective (Bandura, 1991; Harris, 1995; Patterson et al., 1967).

Research in the developmental domain has demonstrated that children and adolescents pursue material rewards, some are more successful than others, and children employ both prosocial and coercive behaviors to this end (e.g., Hawley, 2002, 2003a; LaFreniere & Charlesworth, 1987). To the degree one is successful at competition for resources, one is referred to as socially dominant (Hawley, 1999). Depending on the age of the children and other factors, prosocial and coercive strategies can be measured by self-report, other report, or behavior observations. Prosocial strategies are indicated when a child pursues control of resources (toys, for example) with socially acceptable behavior. In an experimental scenario, these behaviors include requests, promises of future favor, item trades, or unsolicited help (which generally leads to effective commandeering of the play material; Hawley, 2002). Teacher questionnaire items include "this child gets what he or she wants by reciprocating," "by being nice," or "... promising friendship" (Hawley, 2003a). Accordingly, coercive strategies are indicated by items such as "this individual gets what he or she wants by taking," "... threatening," or "... bullying."

Our program has utilized a person-centered approach; that is, we have focused on *types* of resource controlling individuals as well as relationships among variables (e.g., Hawley, 2002; Hawley & Little, 1999). Resource control types can be derived by dividing the distributions of prosocial and coercive strategies into thirds (i.e., 33rd percentile, 66th percentile). By dividing the distributions of the two variables in this way, we have derived five resource control subgroups: (a) bistrategic controllers score high on both prosocial and coercive strategies, (b) prosocial controllers score high on prosocial control only, (c) coercive controllers score high on coercive control only, (d) noncontrollers score low on both coercive and prosocial control, and (e) typical controllers, the largest group, are average on each and as such, serve as a useful comparison group. We invoke Machiavelli's name to apply to bistrategic controllers because his philosophy describes well the behavior of these very socially dominant individuals who seem to balance effectively prosociality and coercion, are consequently highly successful resource controllers, and as a result command a great deal of attention from the group.

We have studied strategies of resource control and their correlates in preadolescents (via self and peer report; Hawley, 2003; Hawley, Little, & Card, 2005; Hawley, Little, & Pasupathi, 2002) and preschoolers (via observations, interviews, and teacher ratings; Hawley, 2002, 2003c; Hawley, Napientek, Mize, & McNamara, 2005). An intriguing picture is beginning to coalesce of the Machiavellian as an aggressive and deceptive individual with bona fide social skills who is highly motivated to seek personal goals and obtain high status. In contrast to traditional developmental approaches that suggest that such "antisocial" behavior would repel others and be associated with an underdeveloped morality, these recent studies show that, on the contrary, bistrategic individuals appear to attract the attention of others and they may in fact fully understand moral norms and values (their self-interested behavior notwithstanding; Hawley, 2003c).

Bistrategic adolescents, for example, describe themselves as more aggressive than their peers in terms of both physical and relational forms of aggression (e.g., social exclusion and gossip; Crick & Grotpeter, 1995). They admit to being hostile and endorse cheating in school. Peers also report bistrategic controllers to be the most aggressive children in the schoolyard. At the same time, bistrategic controllers claim themselves to be socially skilled in terms of being able to detect their effect on the emotions of others (Hawley, 2003a). Although this claim sounds suspiciously self-aggrandizing and narcissistic, teachers see these youths as socially skilled as well, suggesting that there may be some validity to these adolescents' self-views (Hawley, 2003c; cf. Lochman & Dodge, 1994; Underwood, 2003). They are the most effective resource controllers from their own perspectives and that of peers and, despite their aggressive behavior, they are socially central (i.e., of high status), well-liked, and the focus of others' friendship aspirations (Hawley, 2004; Hawley, Little, & Card, 2005).

In terms of positive attributes and social success, bistrategic controllers are similar to the highly skilled prosocial controllers. At the same time, bistrategic controllers resemble coercive controllers in terms of negative characteristics such as aggression, hostility, and cheating. Yet coercive controllers are more impulsive than bistrategic controllers and lack their evident perspective taking ability. As a consequence, coercive controllers are socially repellent and disliked. Due to the differential evaluation of these two groups by their peers (even in preschool; Hawley, Napientek, et al., 2005), and to the fact that bistrategics are highly effective at resource control, it should come as no surprise that bistrategic children enjoy a higher than average social self-concept and positive well-being (Hawley et al., 2002).

Bistrategic controllers are certainly thought provoking due at least in part to their extreme relative standing on both prosocial and coercive strategies of resource control and all benefits that ensue. But none of these benefits are enjoyed by the other group also extreme on the two strategies; namely, noncontrollers. As predicted by resource control theory, these youths seem to be especially at risk. Though they as a group are rated as the least aggressive by peers and teachers, they are also described (by the self and others) as unable to pursue resources in the presence of peers, socially unskilled, anxious, and unhappy. To make matters worse, they are rejected by their peers (e.g., Hawley, 2003a). Thus the social centrality hypothesis of resource control theory (i.e., that social dominants are socially appealing) holds much to the benefit of the bistrategic controllers, but to the clear detriment of the noncontrollers.

The distinct behavioral and personality profiles of the resource control groups add to the discussion that interfaces Machiavellianism with game theoretic models. In the parlance of game theory, we can construe the bistrategic resource controller as effectively employing a mixed strategy of prosociality and coercion. Resource control theory views this behavioral flexibility more in line with social skill than with psychopathology. Unlike Christie's original Machiavellians, the bistrategic controllers of resource control theory do not appear to be manipulating for manipulation's sake, nor do their profiles suggest that they view others with excessive contempt. On the contrary, they appear to be highly extraverted and intrinsically motivated to pursue relationships with others (e.g., for joy and pleasure). Their profile is admittedly complicated, however, by the fact that this extraversion is accompanied by hostility and intrinsic social motives are balanced by extrinsic social motives (e.g., power and status; Hawley et al., 2002).

Also consistent with the logic of economic models and frequency dependent selection, effective strategies do not necessarily reduce the benefits of alternate strategies to zero. When an introverted and socially anxious child finds himself/herself in a population with effective bistrategic (a mixed strategy), prosocial (cooperative strategy), and coercive controllers (defect strategy), the wisest strategy in terms of minimizing costs and maximizing benefits may simply be to stay out of the fray. Indeed, deference appears to be the strategy adopted by the noncontrollers.

Because competition for resources is evident in the earliest social groups (e.g., already by the age of 3; Hawley & Little, 1999), and because some children habitually defer to others when their relative ranks are known (a matter of experience and familiarity), resource-related encounters in stable social groups can be powerful sculptors of personality. Accordingly, dominance and personality is the topic of the next section.

## SOCIAL DOMINANCE AND PERSONALITY

### The Language of Personality

Personality theoreticians have observed that the most critical features across which humans differ likely have evolutionary importance. For example, Cattell (1957) noted that natural language pertaining to personality reflects verbal symbols signaling important aspects of individual behavior patterns that are only evident in social contexts; that is, personality descriptions convey how individuals influence each other and adjust to each other's behavior (F. H. Allport & G. W. Allport, 1921). An evolutionary framing can illuminate why certain personality dimensions repeatedly arise in personality theories throughout the century (e.g., surgency/extraversion, agreeableness/sociability, emotional stability, conscientiousness, intellect/openness to experience; Buss 1997). These terms are consistently evaluative (Peabody, 1985) and as such communicate who will make a good alliance partner, who is no threat, who may cheat us, who will not return a favor, who is of high status, and so on. In short, individuals' personalities communicate their value as a group member and "summarize the most important features of the social landscape" (Buss, 1997, p. 334). More specifically, and especially germane to the discussion of social dominance, Hogan (1983) suggested that trait terms summarize observers' evaluations about who will contribute to the group's resources and who will exploit them.

Evolutionary psychologists and personality psychologists share the common goal of understanding the structure of human nature. For example, the representation of resource control types emerging from scores on two independently measured but functionally similar variables (i.e., prosocial strategies and coercive strategies) is reminiscent of several recurring themes in 20th-century personality psychology involving a balance of needs for aggression/ascension with needs for affiliation (e.g., Adler, 1929; Freud, 1930; Horney, 1945; Murray, 1938) as well as later interpersonal circumplex models (e.g., Leary, 1957; Wiggins, 1996). To the extent that bistrategic controllers are effectively meeting their own goals while at the same time attracting others securing status, they are quite effectively balancing "agency" and "communion" (Wiggins, 1991), meeting their competence and relatedness needs (Deci & Ryan, 1985), and "getting along" while "getting ahead" (R. Hogan & J. Hogan, 1991).

*A Special Role for Extraversion.* Machiavellians as described here appear to be "keenly attuned to the ways others are reacting, and so are able to continually fine-tune their social performance, adjusting it to make sure they are having the desired effect" (Goleman, 1995, p. 119). That is, they appear to be "emotionally intelligent." Social skills, including those of nonverbal decoding, also characterize classic descriptions of extraversion (e.g., G. W. Allport, 1924; Jung, 1923), where extraverts (in contrast to introverts) are especially attuned to the demands of the external social world. The social decoding skills of extraverts are especially evident in situations requiring the balance of multiple social goals that are inherent to a rich and complex social environment (Lieberman & Rosenthal, 2001). Not surprisingly, extraversion is generally associated with social competence and bistrategic controllers tend to score high on extraversion (Hawley, 2003b).

## The Role of Context

Early applications of evolution to behavior (e.g., sociobiology) sometimes elicit negative reactions due to their genetically deterministic connotations. In contrast, contextual factors cannot be ignored in the present theoretical approach to social dominance (and Machiavellianism). First, aggressiveness alone does not ensure ongoing success at resource control. The bistrategic profile encourages broadening understanding of context to include other characteristics of the individual. That is, aggression coupled with more positive qualities, skills, and behavior tendencies make for social and material success in a way that aggression alone does not.

Second, and equally critical, individuals cannot be "socially dominant" alone. The presence of others is a necessary condition for a person to prevail. Thus, social dominance, or competitive superiority, is an aspect of a relationship, the asymmetry of which can be predicted by the interpersonal characteristics and win–loss histories of the individuals involved (see also Bernstein, 1981). Whereas this point may seem self-evident, it has long been overlooked in ethological studies that failed to explore social dominance within a complex system of interpersonal relationships. That is, social behavior, including that involving a contested resource is highly dependent on the identities of the interactants, their personal characteristics, and the unique history of their interactions (see Hawley & Little, 1999, for an application of the Social Relations Model of Kenny & La Voie, 1985).

Thus, because competition is inherent to relationships, social dominance cannot be a genetically encoded trait per se. As such, it makes no sense to speak of a "gene for dominance." More appropriately, the genetic underpinnings of several traits known to predict social dominance can be considered (e.g., persistence, extraversion). Without doubt, there is a conditioned component to relative success or failure at competition and therefore also the form and intensity of future attempts. If resources are constrained (which they generally are), then interactions may be characterized by a certain zero-sumness. For example, if "resources" to preschoolers include access to recreational/learning material, very often these materials are effectively monopolized. Unavoidably then, if there are consistent winners of competition, then there must also be losers. Experiencing early loss repeatedly in competitive interactions could intensify (indeed cause) individual differences in persistence (e.g., learned helplessness; Peterson, Maier, & Seligman, 1993). Because the noncontrolling strategy can be created experientially (e.g., learning that control attempts will be ineffective or punished), genetic mechanisms need not be invoked for explaining losing strategies. Accordingly, it makes little sense to propose selective mechanisms for a genome designed to lose in competitive contexts. Deferring to others can be considered simply making the best of a bad situation.

More likely, natural design endows organisms with the desire to win competitive contests as well as cognitive mechanisms designed to discriminate contexts in which a loss is probable. Additionally, organisms would be expected to be endowed with the ability to gravitate toward contexts where wins are more promising. In the case of preschoolers, this may entail the careful choosing of playmates (other weak competitors) or pursuing resources more vigorously in the presence of a teacher who is likely to enforce equity. The context specificity of behavior is easy to observe; behavior changes are striking in withdrawn or anxious children when an optimal niche is found. Such "niche picking" is not limited to preschoolers; presumably, adults also choose contexts where control attempts are rewarded.

## CONCLUSIONS

Evolutionary approaches to personality should optimally incorporate issues of heritability, social and ecological contexts, and development. It is important to keep in mind that evolutionary theory itself is seldom under scrutiny, but rather some specified lower level theory is evaluated within an evolutionary metatheoretical framework. Here, resource control theory was described. As a (developing) formalized theory, it gives rise to fully testable and falsifiable predictions regarding the development of social dominance relationships, resource directed behavior, and strategy employment.

As an evolutionary theory, it makes some rather strong claims, namely, that interpersonal relationships are contexts rife with competition, however subtle. It suggests that some individuals, regardless of context, will come out on top due to the flexibility with which they employ various strategies of control. It also suggests that if there are consistent winners of interpersonal competition, then there will most assuredly be consistent losers. The costs and benefits associated with winning and losing extend well beyond the competition itself; the social group appears to be attracted to winners of competition and repelled by losers. Important questions for future inquiry may include those addressing the potential for physical health outcomes to win–loss

experiences (Sapolsky, Alberts, & Altmann, 1997; Virgin & Sapolsky, 1997). If a loss experience is accompanied by an endocrine response, then is it not plausible that a lifetime of collected losses incurs some real physiological insult?

Work in social dominance lost its luster in the 1980s mostly due to its reliance on strictly ethological models (see Vaughn, 1999, for comment). As exemplified here, revised approaches that integrate strengths from modern evolutionary thinking (cf. genetically deterministic models), acknowledge the complexities of human interaction, and recognize the development of essential individual differences, may rejuvenate interest in the fundamental importance of power hierarchies as an inevitable aspect of group life.

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