The Ontogenesis of Social Dominance: A Strategy-Based Evolutionary Perspective

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Social dominance results when members of a social group vary in their ability to acquire resources in the presence of others (i.e., compete). Traditional approaches to social dominance often emphasize coercive behavior, but nonetheless suggest that dominant individuals are socially central (e.g., watched, attractive social partners). These patterns, however, apply to humans only up to a certain age. This apparent discontinuity may give the false impression that social dominance is less relevant to human social organization than it is to animal social organization. This paper reintroduces the ethological concept of social dominance, but reinterprets it from a strategy-based perspective. That is, if social dominance is defined as differential ability to control resources—without reference to how this is done—then children evidently employ different strategies to compete with peers (e.g., coercive and prosocial). Furthermore, the type of strategy children employ and peers' responses to it depend largely on the ages of the children. By adopting a strategy-based approach to social dominance and explicitly incorporating developmental processes and uniquely human capacities, human social dominance patterns appear to be more similar to primate patterns than commonly believed. Implications for social competence, peer relationships, and the development of the self are discussed. © 1999 Academic Press

Survival, growth, and development oblige resource acquisition (Ricklefs, 1979), and resource acquisition compels competition (Darwin, 1859). The role that this principle plays in the lives of nonhuman species is virtually unquestioned. The issue is less clear for humans, however, largely because competition ranges from the trivial (e.g., the last chocolate donut) to the crucial (e.g., the last liter of potable water) and because humans claim to hold equity in high esteem. Yet for any species, individuals are not all equally able to procure the necessities (or niceties) of life. The natural asymmetries

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among individuals in their ability to prevail in competition result in social dominance.[1]

Although social dominance has been studied extensively in young children, its relevance for the social organization of older individuals is murkier. There comes a time in our childhood when we realize that aggression—a traditionally central feature of social dominance—is unacceptable and we learn to behave more agreeably. Does this mean that dominance disappears from our lives? Probably not. But it may change its demeanor so dramatically that we tend to overlook it or call it by another name. In this article, I present a developmental model of human social dominance (more specifically, of resource acquisition strategies) that suggests that some aspects of our behavior may still reflect our primate origin.

SOCIAL DOMINANCE: A COMPARATIVE QUANDARY

The conspicuous peck-order of chickens gave rise to the resource-centered view of social dominance (Schjelderup-Ebbe, 1922). Since then, animal behaviorists have found dominance hierarchies to be salient, common, and relatively stable across many species, especially primates (Dunbar, 1988; Gartlan, 1968; Hausfater, Altmann, & Altmann, 1982; Maslow, 1936). Although various versions of dominance appeared in the research on children soon after (e.g., Bühler, 1927; Hanfmann, 1935), a structural approach to social groups (i.e., with a focus on linearity, stability, and transitivity) was adopted more recently in the 1970s with ethological studies of children's peer groups (e.g., McGrew, 1972; Sluckin & Smith, 1977; Strayer & Strayer, 1976). These lines of research converged on one unmistakable reality: Not only are chickens and monkeys organized hierarchically, but groups of young children are too. What is less clear is what this means.

From this essentially comparative perspective, theories of social dominance suggest that socially dominant individuals should be focal group members—they should be influential, the focus of visual attention (i.e., looked at, watched), and attractive social partners (e.g., Abramovitch & Strayer, 1978; Chance, 1967; Seyfarth, 1977). Because dominance presumably reflects a general effectiveness in the environment, other group members should gravitate toward high-ranking individuals for the favor they bestow and to watch them, learn from them, and imitate them. Such patterns not only have been documented in numerous species, but in young children as well. In other words, similar to the privileges enjoyed by the alpha gorilla, social dominance in toddlers, preschoolers, and kindergartners appears to be associated with a certain amount of prestige.

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[1] Many authors have questioned the unitary nature of the generalized dominance construct (e.g., Gartlan, 1968; Hinde, 1974; Richards, 1974). Although the animal behavior and ethological literatures are necessarily presented in simplified forms, full consensus in the field should not be assumed (see, for example, Bernstein, 1981).

In contrast to the silver back gorilla, however, there comes a time in a child's life when prevailing impresses peers less and less, and dominant individuals in the traditional sense lose their luster. In other words, social centrality and social dominance become independent over time. Does social dominance lose its importance as an organizational feature of human social groups? Or are the prevalent theoretical and measurement paradigms of social dominance as applied to humans missing something? In this article, I argue that social dominance is a centrally important factor in human social organization, and this aspect of our behavior (as well as its social ramifications) is best explored only after we explicitly renovate our theoretical and measurement paradigms to reflect social and cognitive proficiencies unique to humans.

Toward a Solution

The purpose of this paper is to explore social dominance in humans from a developmental perspective. I adopt evolutionary principles that have been developed and refined over the past 30 years and apply them to the development of the self from an individual differences perspective. Specifically, I integrate aspects of multiple related lines of inquiry that give rise to common questions about behavioral development and function. First, I draw from the theoretical and empirical work of human ethologists (e.g., Abramovitch & Strayer, 1978; McGrew, 1972; Strayer & Strayer, 1976) and animal behaviorists (Bernstein, 1981; Chance, 1967; Rowell, 1974; Strum, 1994) that addresses what it means and what it takes to be a socially dominant individual, and the role resources play in the organization of social groups. Second, I address questions of development within the framework of evolutionary biology (e.g., developmental sociobiology; see Charlesworth, 1996; MacDonald, 1988a) and adopt the contemporary hierarchical organismic systems approach over approaches that oblige determinism and immutability (e.g., Fagen, 1981; Geist, 1978; Gottlieb, 1991).[2] Third, I employ evolutionary approaches to sociality that emphasize the dual requirements of social

[2] Although sociobiologists are mistakenly accused of genetic reductionism, most contemporary sociobiologists maintain a ''systems view,'' an approach that is of ever-increasing importance to developmentalists as well (e.g., Bronfenbrenner, 1979; Lerner, 1995; Magnusson, 1988; Valsiner, 1987). That is, individual development (or individual adaptation) is seen as hierarchically organized into multiple levels of mutual influence. In contrast to more deterministic approaches, genetic expression is viewed as being affected by other levels of the system, including the behavior of the organism and the social and physical environment (e.g., Gottlieb, 1991). This notion of organism as recipient and creator of environmental forces that shape its phenotypic adaptation can be seen in the life history work of Fagen (1981) on animal play; namely, individuals' actions (i.e., play) create enriched environments (e.g., social and motoric stimulation) that foster neural growth which ultimately permits valuable behavioral flexibility in later stages of development (see also life history perspectives of Geist, 1978; Mayr, 1982; Strum, 1994). Similar arguments have been made at the level of the genome (e.g., Plomin, DeFries, & Loehlin, 1977).

species—namely, to be selfish and yet coordinate with others simultaneously—and the role these requirements play in shaping human behavior and, indeed, human nature (Axelrod, 1984; Alexander, 1977, 1979; Charlesworth, 1988, 1991; Geist, 1978; Humphrey, 1976).

These literatures together suggest that the distinctive cognitive and social complexities of humans afford more sophisticated and subtle means to compete within the social group. When these sophisticated means are taken into account, social dominance in humans converges once again on patterns documented in other species. More specifically, a survey of the developmental literature suggests that humans employ variegated strategies of resource control (i.e., prosocial and coercive) and implementing these strategies is a function of development, individual-level characteristics, and social context. Although the basic features of dominance (deep structure) may be continuous throughout the human life span, phenomenal categories of behavior (surface structure) reflecting facility in resource acquisition may be discontinuous and change morphologically over time (i.e., develop). A practical consequence of this approach is that researchers should look for different manifestations of social dominance at different ages. Only then does it become clear that dominant individuals (i.e., prosocially dominant) are socially central after all.

Overview and Organization

This paper is organized into four general sections. First, the evolutionary underpinnings of social dominance and resource acquisition are discussed, as are the general findings in the animal and human literatures. Second, Charlesworth's theory on the role of cooperation as competition (Charlesworth, 1988, 1996; see also Crook, 1971) is described to lay the theoretical foundation for the strategy-based approach to resource acquisition. Third, I propose a model that integrates developmental change (i.e., differentiation and canalization) with this strategy-based approach to resource acquisition. I support this model by drawing from both the ethological and child development literatures. Last, I offer speculations regarding the similarity of leadership and social dominance in humans.

SOCIAL DOMINANCE AND EVOLUTIONARY THEORY

The behavior of social species evolved in the context of the social group. This fact is no less true for humans (Alexander, 1979; Brewer & Caporael, 1990; Cosmides & Tooby, 1987; Mithin, 1996; Trivers, 1971). From this view, strategies for meeting basic biological requirements (e.g., acquiring resources) are mediated by the presence of others (Geist, 1978; Trivers, 1971). Despite the clear advantages of living and coordinating with others, the fact that resources are limited necessitates within-group competition (Darwin, 1859), and this within-group competition can have far-reaching consequences for human development (Charlesworth, 1988, 1991, 1996).

Based on an individual-level selection rationale (Archer, 1992; Dawkins, 1989; Tinbergen, 1953; Williams, 1966), behavioral patterns, temperament characteristics, or physical attributes that reliably increase the likelihood of gaining preferential access to resources are favored by natural selection. Accordingly, dominance rank (reflecting relative competitive ability) appears to be correlated with health, vigor, fecundity, and reproductive success (Betzig, 1986; Silk, 1986), presumably because the upper echelons of the hierarchy are best able to fulfill their nutritional, social, and security needs relative to other group members.

Variant Behavioral Strategies

Sociobiologists have long recognized that the selection of such characteristics does not imply the selection for unbridled aggression and winner-take-all tactics. For example, the ability to judge accurately one's own relative ability to compete with other group members and to behave prudently has a sizable selective advantage over fight-at-all-costs strategies that lead to reckless energy expenditures and risks of injury (Axelrod, 1984; Geist, 1978; Maynard Smith, 1974). As a consequence, individuals presumably have evolved means to simultaneously promote personal resource acquisition and, at the same time, minimize interpersonal conflict. For example, reciprocating with others (Trivers, 1971), responding in kind (Axelrod, 1984), forming alliances (Chapais, 1992; Strum, 1994), and cooperating (Charlesworth, 1996; Crook, 1971) all reduce the immediate personal cost of conflict while simultaneously increasing the probability of future access to resources by fostering interpersonal relationships.[3]

Learning Where You Stand

Individuals vary in their motivation and ability to compete for resources. Some are simply more acquisitive than others and more capable of getting what they want. Social dominance relations reflect the manifest asymmetries that arise between individuals in resource-related motivations and abilities (i.e., win–loss patterns; Bernstein, 1980, 1981; Gartlan, 1968; Rowell, 1974; Strayer & Strayer, 1976). After multiple encounters with others who are also pursuing their goals, individuals learn their relative ability and eventually establish a mutual ''understanding'' about constraints unique to each of these asymmetrical relationships (Bernstein, 1981; Hand, 1986; Hawley & Little, in press; Hinde & Stevenson-Hinde, 1976; Rowell, 1974). The adaptive rule

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[3] Because cooperation has clear advantages over individualism, some have argued that cooperation and other-oriented behavior is selected for at the level of the group; that is, groups of individuals who help each other do better than groups of individuals who do not (Campbell, 1965; Kropotkin, 1902; but see Campbell, 1978). These group-level arguments have been criticized for, among other things, underestimating the intensity of within-group competition and consequently have been downplayed (see, e.g., Krebs & Miller, 1985; Williams, 1966).

of thumb in competitive encounters would be, ''depending on who your opponent is, assert when you can prevail, yield when you cannot.'' Accordingly, a dominance hierarchy summarizes these asymmetrical relationships.

As straightforward and sound as this logic is, it is in practice underadopted. One reason for this may be due to its implications for the dominance hierarchy, an aspect of group structure central to traditional ethological thinking. For example, from Bernstein's strictly relational perspective (1981), a social dominance hierarchy is not a functional organization, but an inescapable consequence (epiphenomenon) of differential individual-level competitive abilities (see also Archer, 1992; Tinbergen, 1953; Williams, 1966). In other words, dominance hierarchies have not evolved, but resource-directed behavior has (Rowell, 1974; Williams, 1966; cf. Strayer & Trudel, 1984; Wynne-Edwards, 1962).[4]

Summary

As defined here, social dominance is distinct from, but has aspects in common with, trait theories of dominance from personality psychology (e.g., Moskowitz, 1993; Mudrack, 1993). Although individual-level qualities are central to the presented view (e.g., multiple qualities predict relative standing within the group such as size, temperament, and motivation; Hawley & Little, in press; Savin-Williams, Small, & Zeldin, 1981), these qualities are not in themselves social dominance. Nor is the relational approach derived from early reductionistic sociobiological stances, which held dominance to be a genetically coded quality (e.g., Suarez & Ackerman, 1971).[5] The focus here

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[4] Rowell (1974) observed that dominance misleadingly appears to serve an organizing function because conflict between individuals diminishes as a hierarchy emerges. To say that dominance hierarchies are functional organizations implies that individuals balance their needs with others so that the group will survive, and a dominance hierarchy serves this end by regulating aggression within the group. Such reasoning has been criticized as being group-level thinking (e.g., Archer, 1992; Geist, 1978). What is more compatible with individual-level arguments, and yet all too often overlooked, is that conflict also is expected to diminish if individuals learn their relative competitive ability and adapt their behavior accordingly to minimize personal costs (for a recent discussion on the relative merits of these two opposing views, see Wilson and Sober, 1994).

[5] At the foundation of sociobiological arguments is the assumption that behavior has a genetic foundation in order to have evolved (e.g., Wilson, 1975). Contemporary views, however, allow for flexibility and multilevel interactions (e.g., Fagen, 1981; Gottlieb, 1991; Mayr, 1982; Strum, 1994; see footnote 2). For the model presented here, there are three minimal genetically based requirements. First, organisms should be motivated to actively pursue what they need to survive and develop by design (Ryan, 1993; Ryan, Sheldon, Kasser, & Deci, 1996). Second, social species should be inherently motivated to be with others of their species (Panksepp, 1982; Panksepp, Herman, Vilberg, Bishop, & DeEskinazi, 1980). Third, at least some of individual differences reflecting the different ways the organism will meet these needs should be heritable, including temperament, surgency, and empathy (e.g., Bates & Wachs, 1994; Panksepp, 1986; Panksepp, Jalowiec, DeEskinazi, & Bishop, 1985; Plomin, 1994; Zahn-Waxler, Robinson, & Emde, 1992).

is on differential abilities among individuals, and these relationships between unrelated individuals can have no genetic basis (Bernstein, 1987). A perhaps nonobvious logical consequence of this view is that dominance hierarchies are summaries of asymmetrical relationships and, as summaries, they are epiphenomena with no function or downward organizing ability (i.e., not group-level adaptations).

The implications of this argument are twofold. First, at a metatheoretical level, the proposed level of selection is the individual rather than the group: Groups are composed of self-interested individuals, whose self interests include balancing their own needs with the needs of others. Second, and more central to the concerns of developmentalists, by focusing attention on the relationships within a group rather than the group structure per se, the role of the individual comes to the forefront, replete with issues of personality, proximate adaptation (behavioral and psychological), and individual development. Stated more concretely, researchers can shift attention from an abstract group structure to the individual child.

DOMINANCE AND SOCIALITY IN ANIMALS AND YOUNG CHILDREN

Ethological theory suggests and multiple studies across various species have shown that dominance relationships affect many aspects of social life, with dominant individuals playing central roles. That is, dominance is not solely related to resource distribution (e.g., Barton & Whiten, 1993; Schaub, 1995), but is related to social events at multiple levels. For example, dominance is related to how social bonds are formed and allies chosen (Dunbar, 1988; de Waal, 1982); who has sex, when, and with whom (Le Boeuf & Reiter, 1988; Poole, 1989); what the predominant activity of the group is (Douglas-Hamilton & Douglas-Hamilton, 1975); who is watched (Chance, 1967); who gets groomed by whom (Gouzoules & Gouzoules, 1986; Seyfarth, 1977); as well as whose infants are cared for by others (Lee, 1987). In other words, dominant individuals are central group members because they receive a disproportional amount of attention from the group.

Analogous Findings in Early Childhood

Dominant toddlers and preschoolers are not social sideliners either. Much like their primate counterparts, dominant toddlers and preschoolers play an important role in the social group apart from their ability to prevail in disputes. Despite their superior ability to acquire and control the objects they desire, and their evident willingness to employ agonistic and coercive strategies to do so (Russon & Waite, 1991; Strayer & Trudel, 1984), dominant toddlers and preschoolers are socially central in that they are watched, imitated, and liked (e.g., Abramovitch & Grusec, 1978; Jones, 1984; LaFreniere & Charlesworth, 1983; Strayer & Trudel, 1984). Thus, dominance in toddlers and preschoolers is commensurate with the traditional ethologically

derived theoretical and empirical underpinnings of the construct; other group members behave as if they consider the ''alphas'' as possessors of knowledge and competence and therefore are motivated to watch, learn from, and be with them.

The Loss of Prestige over Time

A survey of the nonethological literature, however, suggests that children who might be rated as dominant in the classical sense (resource-directed, agonistic) in the kindergarten and early school years do not enjoy the same attention as their preschool and primate complements. In this age group, social preferences appear to reflect children's burgeoning focus on more positive qualities in their peers. In other words, preschool children are not necessarily alienated by coercive strategies, but older children are increasingly repelled by such behavior. Not unlike dominant toddlers and preschoolers, for example, aggressive 6-year-olds can still be attractive social partners. By the third grade, however, dominant-aggressive children are no longer preferred by their peers and are judged negatively by them (Pettit, Bakshi, Dodge, & Coie, 1990; Dodge, Coie, Pettit, & Price, 1990; Wright, Zakriski, & Fisher, 1996).

Although also not focused on social dominance per se, studies in sociometry and peer acceptance confirm that aggressive children are magnets for peer disapproval (Coie & Dodge, 1983; Coie, Dodge, & Coppotelli, 1982; Newcomb, Bukowski, & Pattee, 1993). In early adolescence, aggressive individuals continue to be less popular than their peers and accordingly are rated as less likeable (Cairns, Cairns, Neckerman, Gest, & Gariepy, 1988; Olweus, 1993; but see Farmer & Rodkin, 1996). From a personality perspective, similar characteristics in adults (i.e., controlling, hostile, and aggressive; Cattell, Saunders, & Stice, 1957) are negatively related to likability (Butt & Fiske, 1969; Sadalla, Kenrick, & Vershure, 1987). These findings indicate that aggressive-coercive tendencies are tolerated less and less as children mature.

Plausible Conclusions and Consequences

Aggressive-coercive behavior may not be alienating in children under 5. It is often the active, extroverted, and willful child who is visible to his or her peers and sought out as a play partner despite his or her tendencies to prevail in disputes over resources valued by children at this age (e.g., toys, attention; see below). But for children old enough to report reliably on who they like most, aggressive children are not high on the list of preferred playmates. This pattern continues throughout adolescence and adulthood. If cast in the parlance of social dominance, one may conclude that ''dominant'' individuals are no longer key players in the social group. Might this pattern of change cast doubt on the importance of social dominance to human social organization?

COMPETING WITH FINESSE

Young children who are coercive with their peers may not suffer the same social consequences as older coercive children. But does social dominance necessitate negative—and eventually maladaptive—behavior patterns? If dominant individuals are by definition competitive, aggressive, and hostile, then the answer, it seems, is yes. But if social dominance is grounded in differential ability to acquire resources in the social group, *regardless* of the means by which this is done, then the answer may be no. Before elaborating on the ways children compete, it is instructive to survey what resources are important in early childhood.

What Do Children Compete for?

In general, resources are anything outside the individual essential for survival, growth, and development (Charlesworth, 1988, 1991, 1996; Ricklefs, 1979). Although no one would deny that monkeys must compete for ecological resources in the environment (e.g., food, water), it is not clear that children in peer groups must (but see Geist, 1978). But developmentalists are quick to recognize that optimal growth and development require much more than nutrients and hydration; important resources include social contacts (e.g., attention, love; Harlow & Zimmerman, 1959), play partners (Corsaro, 1985; Fagen, 1981), and cognitive stimulation (e.g., novelty; White, 1959). Thus, it should come as no surprise that developing humans are highly motivated to seek out others for interaction opportunities (e.g., peers and adults) and novelty for cognitive and physical stimulation (e.g., toys). Research in diverse domains such as motivation (e.g., White, 1959) and children's friendships (Corsaro, 1985; Rizzo, 1989) indicates that children, indeed primates in general (Chapais, 1996; Kummer, 1978; Harlow & Zimmerman, 1959), are highly motivated to access social partners and novel stimuli.[6] To the extent that novelty and peers are limited, individuals must compete for them in various ways (see Charlesworth, 1988, for extended discussion; Corsaro, 1985; Weinstein, 1969). Therefore, in the discussion that follows, resources can be social or material.

Mutualistic Strategies and Resource Acquisition

As mentioned above, getting access to resources—the cardinal feature of dominance—need not be agonistic or coercive. Other-oriented behavior can be equally, if not more, effective (e.g., Strum, 1994). Charlesworth's theory

[6] Also in an evolutionary sense, social relationships can be viewed as resources in and of themselves because individuals who have social contacts to collaborate with do better than those who do not. This is especially evident in the social dominance hierarchies of certain species of baboons and macaques where a female's rank is largely dependent on her ability to obtain and maintain alliances with other females (e.g., Chapais, 1992, 1996; Cheney, Seyfarth, & Smuts, 1986; Hausfater et al., 1982; Hrdy & Hrdy, 1976).

of cooperation is of central importance here. Namely, cooperation can function as competition in at least two ways: Two (or more) individuals can work together to gain resources otherwise unattainable (presumably at the expense of a third party) or individuals can coordinate their efforts to gain access to resources which in the end are distributed inequitably (Charlesworth, 1988, 1996; see also Chapais, 1992, and Crook, 1971).

Theoretical biologists and mathematical ecologists have long recognized that mutualistic behavior strategies are effective resource acquisition strategies in social species where group members encounter each other regularly and depend on each other's presence for survival and reproduction (Alexander, 1979; Axelrod, 1984; Kropotkin, 1902; Trivers, 1971). Similarly, human behavior theorists have assumed that our need to maintain harmonious relationships within a group has mediated our strategies for meeting basic biological requirements (e.g., acquiring resources: Alexander, 1979; Brewer & Caporael, 1990; Charlesworth, 1988; Cosmides & Tooby, 1987). In fact, purely self-oriented behavior jeopardizes relationships with those we live with and depend on which implies a sizeable selective advantage to behave in ways that are cooperative rather than exploitative (but not overly self-sacrificing). The winning strategy would be: Be communal to the degree that you can maximize reward for you and your relatives for the long run. This may involve forms of nepotism (Hamilton, 1964, 1971; Rushton, 1989), treating others as they have treated you (Axelrod, 1984), reciprocity (Trivers, 1971), cooperation (Charlesworth, 1996), forming alliances (Chapais, 1996), or deception and manipulation (Alexander, 1977; Byrne & Whiten, 1988; Humphrey, 1976).

Developmental Implications

Developmentalists and psychologists do not typically consider cooperation as functionally competitive (e.g., Derlega & Grzelak, 1982; Hartup, 1996).[7] Nonetheless, and in contrast to many group structure and evolution-

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[7] The proposal that cooperation is competitive (or ''selfish'' in sociobiological parlance) appears to contradict developmental research on altruism and prosocial behavior. In fact, sociobiological and developmental approaches are compatible. In the vernacular of child developmentalists (e.g., Eisenberg, 1996; Eisenberg & Mussen, 1989; Radke-Yarrow, Zahn-Waxler, & Chapman, 1983; Zahn-Waxler & Smith, 1992), prosocial behavior involves voluntary actions that benefit others (e.g, helping, sharing, and cooperating). This definition does not favor any one of a variety of possible motivations underlying such behavior (Eisenberg & Giallanza, 1984; Campbell & Christopher, 1996; Eisenberg, 1996). Prosocial behavior may be blatantly egoistic (e.g., performed for reward or power) or altruistic (i.e., motivated by true other-oriented concerns; Eisenberg & Mussen, 1989). Developmental studies have tended to focus on the latter and have shown that even at an early age, children are capable of altruism or the precursors thereof (Zahn-Waxler et al., 1983; Hoffman, 1976, 1994).

Sociobiological arguments tend to rule out the possibility of unconditional altruism because costly behavior that benefits others could only arise in a population under restricted circumstances (Dawkins, 1989; Williams, 1966). Does this mean that children cannot behave altruistically? No. The apparent contradiction arises largely from the different levels of analysis

ary approaches, the above-outlined reasoning has unmistakable developmental implications that are not typically characteristic of group structure and evolutionary approaches (but see Charlesworth, 1996). The emergence of sophisticated strategies like reciprocity, ingratiation, and manipulation, necessitates, among other things, recognizing that other group members may accept or reject you and that they too have needs and desires that must be considered. The acquisition of such social knowledge has been for several decades a focus of those studying cognitive and social development (e.g., Kohlberg, 1969; Piaget, 1965; Selman, 1976; Wellman, 1990). By late preschool or kindergarten, children have refined their abilities to coordinate and cooperate with peers (Cook & Stingle, 1974) as well as to deceive them (Keating & Heltman, 1994; LaFreniere, 1988).

A STRATEGY-BASED APPROACH TO SOCIAL DOMINANCE

Because human behavior and cognition have evolved in environments composed largely of other behaving and thinking humans, meeting one's own needs requires flexible strategies—coercive as well as cooperative—to navigate through the complex social landscape (Humphrey, 1976). But do children actually employ such strategies? Various lines of research in the developmental literature suggest that they do. For example, educational settings are rife with examples of children who coerce others to meet their social and material desires (e.g., Boulton, 1996; Olweus, 1993). In contrast, other children are adept at getting others to go along with them willingly (Edwards, 1984; French, Waas, Stright, & Baker, 1986; Kalma, Visser, & Peters, 1993; Williams & Schaller, 1993). Additionally, Charlesworth and his colleagues have shown that children who are willing or able to combine other-oriented strategies (e.g., helping) with competitive strategies (e.g., commanding, misleading) appear to gain greater access to attractive commodities such as film viewing (Charlesworth, 1988; 1996; LaFreniere & Charlesworth, 1987; Charlesworth & LaFreniere, 1983; see also facilitative

adopted by developmentalists and sociobiologists. At a distal level of analysis, sociobiologists maintain that ''altruistic'' behavior really isn't selfless. That is, the benefactor of such behavior gains either through his/her genetic relatedness to the beneficiary (e.g., Wilson, 1975; Hamilton, 1964; Rushton, 1989) or by increasing the probability of receiving similar aid in the future (i.e., reciprocity; Axelrod, 1984; Krebs & Miller, 1985; Trivers, 1971). Others sympathetic to evolutionary reasoning disagree and argue that selfish genes do not necessitate selfish behavior and that humans have evolved mechanisms (e.g., the capacity for empathy) that predispose us to incur personal cost for others (Batson, 1991; Batson & Shaw, 1991; Caporael & Brewer, 1991; Hoffman, 1976, 1994). Still others have pointed out that selfish motivations in the distal sense (i.e., evolution) need not correspond to selfish motivations in the proximal sense (psychological motives; e.g., Sober, 1991). Indeed, the nature of egoism has vexed philosophers for centuries and modern biologists and psychologists for decades. For the purposes of the arguments presented in this paper, prosocial behavior need not be altruistic and it may be accompanied by selfish motives be they conscious or not (see Batson & Shaw, 1991, and Rushton, 1989, for extended discussion from multiple points of view).

and coercive control: Hollander, 1985). Yet, these types of strategies have not been integrated explicitly into the measurement paradigm of social dominance.

The Measurement of Social Dominance

Although resource-directed behavior is at the core of social dominance, the cooperation-as-competition approach to resource acquisition in the strict sense has not been incorporated into the social dominance literature in a theoretically meaningful way (i.e., it has not explicitly affected the measurement paradigm; but see LaFreniere & Charlesworth, 1987; Russon & Waite, 1991; Strum, 1994). Nonetheless, ''socially acceptable'' strategies to effectively compete with and prevail over peers are commonly reflected in the categories selected to measure social dominance. Whether prosocial behaviors are included in dominance constructs appears to be related to the age of the children. Studies relying on aggression-based measures of dominance largely involve preschoolers, while the studies incorporating the broader-defined dominance construct generally involve older children (e.g., early school years). These trends in construct definition reflect a tacit consensus that dominance is or means something different in older and younger children, despite the reluctance to explicitly incorporate such change in developmental models. But what these changes mean for a theory of social dominance is not clear, nor have they been the explicit topic of study (cf. Wright et al., 1996). Ideally, a developmental theory of social dominance should explicitly incorporate and account for such changes while specifying *a priori* what behaviors are adaptive or maladaptive for the long-term development of the child and, at the same time, be consistent with evolutionary reasoning.

A Revised Measurement Paradigm

These lines of literature together with the cooperation as competition perspective suggest that good competitors can be either effective coercers or successful cooperators. Children develop patterns of social skills that are functionally commensurate with the traditional theoretical underpinnings of dominance (i.e., increase resource-gaining ability), but are phenomenally distinct from the classically defined construct. On the surface, these behaviors are so distinct that we tend to attribute altruistic motivations to them rather than selfish ones and overlook the utility of prosocial behavior in achieving selfish goals (see footnote 7). In other words, a metatheoretically grounded conception of social dominance would be based on resource acquisition as originally intended, rather than agonism per se. In this way, the paradoxical reversals in the dominance literature discussed above may make good sense. Additionally, this conceptual grounding paves the way for developmental studies addressing, for example, how the strategies that individuals employ change over the life span, the relationship of strategy employment to other

social phenomena, and the effects of social dominance on the development of the self.

INTEGRATING RESOURCE-DIRECTED BEHAVIOR AND DEVELOPMENT

The strategy approach to social dominance explicitly maintains that strategies employed to access resources in competitive contexts (e.g., the peer group) can appear on the surface (i.e., surface structure) to reflect a psychological motivational system characterized by altruism, but in fact serve biologically selfish ends.[8] Here, coercive strategies (aggression, insults, threats) serve to access resources without regard to peer evaluation and current and future social relationships. In contrast, prosocial strategies (persuasion, cooperation, helping) serve to access resources in ways that establish and maintain harmonious peer relationships. We know that prosocial patterns of peer social intercourse emerge gradually.[9] Therefore, the strategy approach to social dominance has an important developmental aspect. The strategy approach with its developmental orientation not only introduces fresh potential for dominance structures by clarifying some peculiar findings that thus far have been unexplained, but is also testable through longitudinal and cross-sectional research (e.g., Hawley, Pasupathi, & Little, 1998). Furthermore, it follows a well-established organismic metaphor that models similar changes over ontogeny from the simple and undifferentiated to the complex.

Differentiation

Development is directional and proceeds from the simple to the complex (von Baer, 1828; Coghill, 1929; Werner, 1957), at least in early stages of the life span. As a central characteristic of this basic developmental principle, qualities that are fused at early stages of development become discrete at later stages. The heuristic value of developmental differentiation as a time-dependent process has been applied by other authors in the fields of emotional development (Bridges, 1932), friendship perceptions (Berndt & Perry, 1986), cognitive structures (Mithin, 1996), moral reasoning (Piaget, 1965), intelligence (Detterman & Daniel, 1989), and control beliefs (Little & Lopez, 1997; Skinner, 1990). The application of this heuristic leads to the expectation that correlational relationships will change in a predictable way as the

[8] There is no reason to believe that we are consciously aware of the biological motivations (i.e., reproductive success) that underlie our behavior (e.g., Alexander, 1979). Therefore, I refer to this level of analysis as ''deep structure.'' In contrast, we may be aware of ''surface structure'' phenomena, which are those we consider prosocial and altruistic.

[9] Although the precursors to prosocial behavior appear to emerge very early in the lifespan (e.g., empathic crying; Hoffman, 1976) and helping behavior emerges soon after (Rheingold, 1982; Zahn-Waxler et al., 1983), the prosocial behavior that is referred to throughout this paper involves more complex behavioral sequences that involve the abilities to coordinate behavior with and to recognize mental states in others.
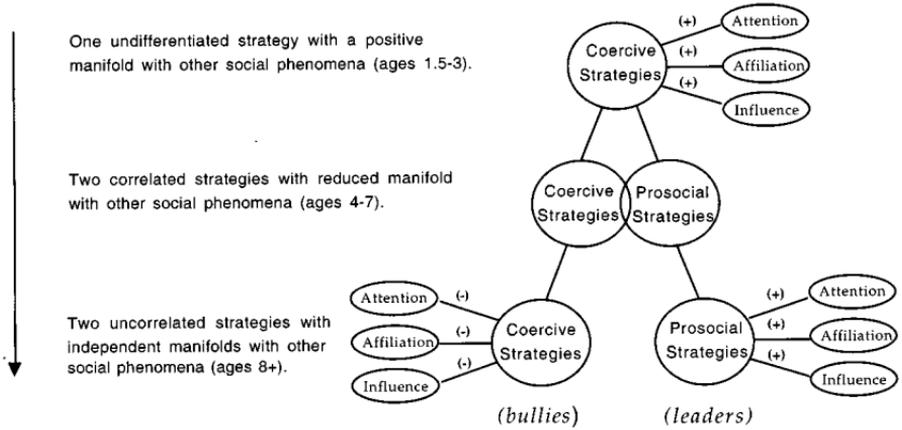
FIG. 1. Differentiating resource control strategies and their relationships with other social phenomena at various points in childhood.

organism matures. For example, at early ontogenetic stages, a vague undifferentiated quality will be related positively to other qualities, but as the quality becomes differentiated, a more scattered pattern of reduced relationships with other qualities will emerge until they eventually reverse (e.g., Detterman & Daniel, 1989).

The differentiation and canalization of resource control strategies. A similar differentiation heuristic can be modified and applied to behavioral strategies implicated in social dominance (see Fig. 1). In general terms, the first behavioral manifestation of the motivation to acquire or control resources is primarily an undifferentiated coercive pattern. After a certain amount of development, more prosocial approaches to resource control and acquisition emerge until after time, the two strategy types are distinct. This distinction once again allows ''dominant individuals'' (i.e., those who are superior at resource control) to be socially central in a manner consistent with a comparative theoretical orientation.

Expected social correlates of prosocial and coercive control. By this logic, social dominance in its initial stages, despite its coercive nature, would be expected to have positive relationships with other social phenomena indicating social centrality such as attentional regard (Chance, 1967), imitation patterns (Bandura, 1977; Maccoby, 1959), and affiliation patterns (Seyfarth, 1977). After the proposed strategies are discrete (i.e., fully differentiated), several types of children would emerge with distinct patterns of social recognition as a function of their strategy employment. Prosocially dominant children, despite their competitive effectiveness, would enjoy positive peer regard. In contrast, children employing coercive strategies (also good competitors) would be highly visible children, yet at the same time repel their peers (see Fig. 1). Because competitive ability mediated by prosociality

attracts positive peer regard, children employing neither of these strategies (i.e., not motivated to control resources) would be overlooked by the peer network relative to the highly visible dominant children of both types. Finally, children employing both strategies (e.g., being highly prosocial in some contexts and highly coercive in others) would, depending on the context, attract some peers and repel others.

Evidence for an undifferentiated coercive strategy at early stages. Even though this model has not yet been tested in a direct way (but see Hawley et al., 1998), a careful examination of the dominance and other peer-based literatures in young children strongly supports the plausibility of these hypothesized patterns. By looking at how researchers define dominance in toddlers and preschoolers, for example, it appears that it is largely coercive (e.g., taking things, insisting on priority). In fact, social dominance in this age group is primarily, if not solely, measured as asymmetry in agonistic conflicts and struggles over objects because prosocial strategies are nonexistent or undetectable (Hawley & Little, in press; LaFreniere & Charlesworth, 1987; McGrew, 1972; Russon & Waite, 1991; Sluckin & Smith, 1977; Strayer & Strayer, 1976; Strayer & Trudel, 1984). Children at these ages lack the verbal abilities and social skills to negotiate with their peers in ways that involve explicit consideration for the desires and feelings of others without direct adult coaching. But despite the coercive nature of resource acquisition strategies of this age group, dominant toddlers and preschoolers appear to be socially central: They are looked at more than subordinant children (Abramovitch, 1976; Hawley & Little, in press; Hold-Cavell, 1985; Hold-Cavell & Borsutzky, 1986; LaFreniere & Charlesworth, 1983; Strayer & Trudel, 1984; Vaughn & Waters, 1981), are more attractive social partners (Hold-Cavell & Borsutzky, 1986; LaFreniere & Charlesworth, 1983; Strayer & Trudel, 1984), and are preferred models of peer imitation (Abramovitch & Grusec, 1978; Hawley & Little, in press; Mischel & Grusec, 1966; Pettit et al., 1990; Russon & Waite, 1991).

In this age group, the means that toddlers and young preschoolers (ages 2–5) employ to control resources in the environment (i.e., toys) is largely unidimensional (i.e., coercive). Dominance hierarchies derived by these measures appear to be related to other social phenomena (attention, affiliation, and imitation) as would be expected in light of general theoretical expectations and the comparative literature (see Fig. 1).

The emergence of prosocial strategies: Intermediate stages. Because prosocial behavior and its underlying cognitive structures are presumed to develop gradually until the fully differentiated state, prosocial and coercive strategies at intermediate stages (i.e., between undifferentiated and differentiated state) will not be distinct. That is, there will be a time when the peer group as well as individual children exhibit both. A child at this stage might, for example, intimidate peers and take things away from them on some occasions, but on other occasions offer ''help'' to a peer in order to access the

desired object (e.g., ''let me show you how to do it''). These self-organizing principles can be likened to a ball rolling on meandering ill-defined tracks on damp soil. With time, experience, and repetition, the soil dries and the paths reduce in number and become stable (e.g., Crick & Dodge, 1994; Waddington, 1942; see also the organismic metaphor of dynamic systems theory; Lewis 1995, 1997). As this metaphor suggests, a child becomes more or less consistent in his or her behavioral approaches to the world as a function of past experience. But before the metaphorical soil dries and the paths harden, the ball may slip from one canal to the other. In terms of behavioral indicators of resource-directed strategies, this overlap would manifest as a mixture of behavioral phenomena, both prosocial and coercive. These behavior patterns may be highly context dependent in that a child may be more coercive on home turf when there is no adult present (e.g., highly possessive) or become coercive in situations where resources are limited (e.g., there is only one swing for two children).

Evidence for intermediate stages: Measurement. The ethological literature indicates that at the upper ages of the preschool group (around the age of 5), behavioral strategies reflecting social dominance do in fact change. Agonistic interactions decrease in frequency in groups of 4- and 5-year-old children as compared to toddler groups. For this reason, dominance in the older group is more difficult to establish based on traditional measures (i.e., attacks, threats, and struggles; Strayer & Trudel, 1984). Older dominant children show a variety of behaviors to dominate such as soliciting the help of others, cooperating, and directing their peers (Hanfmann, 1935; LaFreniere & Charlesworth, 1983, 1987). In 3- to 6-year-olds, dominant children (as defined by prevailing in agonistic interactions) demonstrate superior ability at accessing limited resources relative to their subordinant peers by employing moderately coercive behaviors most frequently (commands, pushes, pulls), followed by more affiliative tactics (invitations, requests, offers), and least often highly coercive strategies (threats, attacks; LaFreniere & Charlesworth, 1987). Similarly, 5-year-old boys employ differential tactics to control play material: some children demonstrate emerging persuasion and negotiation skills (''social leaders''; Hanfmann, 1935), while others disregard their peers by taking, ignoring, and bullying (''gangsters''; Hanfmann, 1935). By the ages of 4 or 5, dominant children appear to include both those with prosocial tendencies and those without. This mixture of prosocial and coercive strategies characteristic of some age groups accordingly influences researchers' variable choices. When the study participants are early elementary school children, for example, indicators of social dominance tend to include not only coercive measures and physical assertions, but also verbal directives, suggestions, and persuasion (e.g., LaFreniere & Charlesworth, 1983; Pettit et al., 1990; Savin-Williams, 1979).

Intermediate stages and social centrality. The social centrality aspect of social dominance suggests that resource controllers will be socially recognized. Therefore, dominant children employing one or both types of strategy

should be socially central. But the employment of coerciveness (alone or in combination) will win regard only until the time when children themselves differentiate the strategies and accordingly gravitate toward prosocial dominators. But until they do, dominance is dominance and dominance is impressive.

Evidence for intermediate stages: Social centrality. There is some indirect evidence indicating that both strategy types attract positive attention from peers. First, children of preschool and kindergarten age visually attend to characteristics consistent with both strategies. Three- to 6-year-olds look more at peers who possess characteristics consistent with prosocial dominance (e.g., assertive, confident, making suggestions) as well as with the coercive dominance (e.g., competitive, forceful, teasing, aggressive: Vaughn & Martino, 1988; Waters, Garber, Gornal, & Vaughn, 1983). In other words, those who are influential in both negative and positive ways win regard from their peers. The transition to admiring prosocial strategies more than coercive strategies appears to occur between the first and third grades. First-graders admire coercive strategies, yet third-graders do not: Higher ranked first-graders (a mixture of agonistic and leadership characteristics) were more liked than their lower-ranked agemates, but this was no longer true by the third grade (Pettit et al., 1990, see also Dodge et al., 1990). These shifts in social preference appear to coincide with the emerging ability to accurately assess character. To third-graders, those who make decisions and give orders are ''leaders.'' By the sixth grade, however, ''leaders'' make decisions, but benevolence and honesty are also important (Smith & Guerney, 1977).

Evidence for two distinct strategies at later stages. In the later elementary years, children reliably differentiate peers utilizing coercive strategies (bossy, interrupts, shows off, fights) from those who are influential and agreeable (good ideas, get things going, sociable; Masten, Morison, & Pellegrini, 1985). The peer relations literature (e.g., sociometrics) indicates that by this time social preferences have bifurcated; children like influential, supportive, sociable, and independent peers but dislike bossy and aggressive peers (Coie & Dodge, 1983; Coie et al., 1982; Newcomb et al., 1993). Apparently it is not influence per se that repels peers, but rather the way that it is wielded.

In adolescence, aggressive individuals continue to be less popular than their peers and accordingly are rated as less likeable (Cairns et al., 1988; Olweus, 1993). In contrast, those who wield their influence prosocially are liked (Wright et al., 1996). Yet those who are simultaneously aggressive and are nominated as leaders by their peers (i.e., those employing both strategies) can have sizeable friendship networks, despite being actively rejected by others (i.e., controversial children; Coie et al., 1982). Neglected children (i.e., those who are overlooked by their peers) appear to not engage in behavior characteristic of either type (Coie & Dodge, 1983; Newcomb et al., 1993).

Within the domain of personality psychology, the literature based on

adults explicitly views dominance as two distinct dimensions–leadershiplike assertiveness construct (e.g., Gough, McClosky, & Meehl, 1951) and hostile and aggressive control (e.g., Cattell, Saunders, & Stice, 1957). Not surprisingly, these two diverging types of dominance have opposite relationships with likability (Butt & Fiske, 1969; Sadalla et al., 1987).

Summary. Resource acquisition strategies are coercive in toddlers and preschoolers. Children at this age simply go after what they want, being unable to process others' perspectives. Prosocial strategies to control resources appear to emerge around the ages of 4 and 5. At these ages, disputes are no longer settled solely by force, but by compromising, taking turns, and sharing. By the early elementary years, the strategies canalize further and peers' abilities to distinguish between the two behavior patterns emerge and refine (Masten et al., 1985; Pettit et al., 1990). The result is a reversal in the relationships between social dominance as *traditionally* defined (i.e., coercion) and affiliative phenomena: Coercive dominators are not favored group members, but those who control in benevolent ways are (i.e., prosocially dominant; see Fig. 1). When the concept of social dominance is centered on resource control rather than on the means by which this control is achieved, social correlates of social dominance, as documented in the ethological literature, reemerge.

MECHANISMS OF CHANGE

What underlies a child's ''choice'' of employing prosocial strategies of control, coercive strategies, both, or neither? First, there is the question of timing and the development of underlying cognitive structures that enable a sophisticated prosocial approach to resource control. Second, I believe personal factors such as a child's social orientation and goal structure impel him/her toward or away from prosociality. Each of these will be taken in turn.

Cognitive Growth

Understanding others. The timing of the resource control strategy likely follows a similar time course as other structures that reflect the child's growing understanding of the complex social world. Certain cognitively and emotionally based understandings precede a child's ability to, for example, engage in reciprocal toy exchanges, cooperate, manipulate, and behave altruistically. A child must grasp that a play partner is a thinking, believing, desiring entity before these thoughts, beliefs, and desires can be considered and weighed against his or her own. The cognitive foundations of prosocially based resource acquisition strategies may be based on the comprehension of others' thoughts and beliefs (Flavell, Green, & Flavell, 1995; Wellman, 1990), the development of empathy (Hoffman, 1976; Zahn-Waxler, Radke-Yarrow, & King, 1983), social information-processing abilities (Crick & Dodge, 1994), conceptions of justice and equity (Kohlberg, 1969; Piaget,

1965), role-taking ability (Selman, 1976), and declining egocentrism (Piaget, 1965). Mastery of these understandings does not guarantee prosocial strategies in the peer group; there are undoubtedly strong emotional and motivational components as well (Batson, 1990; Eisenberg & Fabes, 1991; Hoffman, 1976). Additionally, and perhaps counterintuitively, perspective-taking abilities presumably underlie the ability to subtly manipulate, deceive, and exploit. These behaviors serve to hide individuals' selfish intentions while making them look like fair players (Krebs, Denton, & Higgins, 1988).

Social influences and learning. Despite the fact that young children naturally have strong social orientations, the elaboration and internalization of these proclivities is fostered by socializing agents (e.g., parents, siblings, peers). Contingent rewards, social approval, and praise of the child's character have all been shown to affect prosocial behavior (see Grusec, 1991 for review). Social contingencies that maximize the child's opportunity to understand his or her behavior and to make internal attributions in a supportive environment appear to be the most effective in the long run. In this regard, parental attitudes, rearing styles, and disciplinary practices have a decided impact (e.g., Hoffman, 1983; Lepper, 1983) as does the initial attachment relationship between the primary caregiver and the child (Kestenbaum, Farber, & Sroufe, 1989; Waters, Wippman, & Sroufe, 1979).

Growth through conflict. In addition to parental influence, children learn how to effectively interact with others in the context of play and the peer group. In the social realm, interactions with peers expose a child to differing goals and points of view: Children must constantly adapt their social understanding to novel and ever-changing realities iteratively (i.e., assimilate and accommodate; Piaget, 1965). Within the context of resource acquisition strategies (cf. Turiel, 1972), children likely go through a period (however brief) of experimentation with various behavioral strategies. For example, imagine the much-startled 3-year-old boy who quite abruptly discovers that taking things from peers in his new preschool group leads to much different social consequences than he had experienced in the nursery. His new 4-year-old peers likely greet these encroachments with mighty protestations of unfairness and, perhaps, decisive punitive measures. This disconcerted child would be put in a position to restructure his understandings of the social world in order to adapt to the new social order.

Personal Factors

Sociability and impulse control. Cognitive foundations, parental influences, and experiences in the peer group make prosocial strategies possible. But what makes these strategies probable? Personal factors (personality, temperament) likely play an important role. One important personal factor is the degree to which the child is oriented to the social world in terms of sociability, valuing positive social recognition, being attuned to social cues, and being agreeable (see Fig. 2). Equally important, perhaps, is the degree to
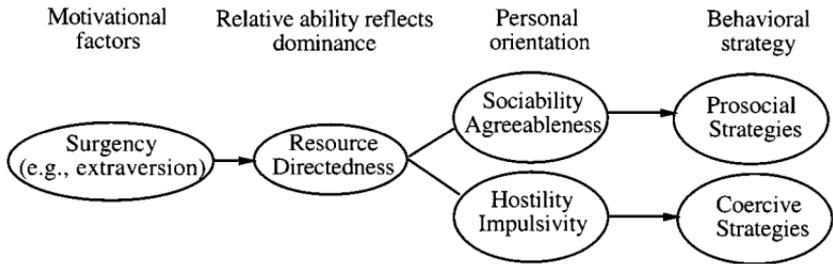
FIG. 2. Mechanisms proposed to underlie social dominance and the bifurcation of resource control strategies.

which the child has mastered impulse control and emotional regulation. In addition to being surgent, a child who is prosocially dominant is sociable, finds disapproval aversive, is attentive to social cues and sees others' perspectives, is friendly and warm, thinks about the consequences of his or her actions before carrying them out, and doesn't overreact when things don't go as planned (Hawley et al., 1998). In contrast, a coercive controller is unsociable, is inattentive to social disapproval, fails to consider or understand others' points of view and desires, is hostile and egocentric, behaves impulsively, and responds poorly when thwarted (see Fig. 2).

An additional consideration is that these two types of children may have distinct goal structures. Prosocially dominant children are probably highly motivated to connect with peers for the pleasure and fulfillment that such relationships bring (i.e., intrinsically motivated to achieve social goals; Deci & Ryan, 1985). In contrast, coercive children may be less motivated by personal relationships or motivated largely by instrumental goals such as access to material goods or power (i.e., extrinsically motivated; Olweus, 1993). In other words, prosocially dominant children behave as if they ''recognize'' (need not be conscious) that the social world mediates access to the material world while coercive children do not. In this respect, prosocially dominant children may be considered highly socially competent in terms of being able to balance well self and other priorities (Bakan, 1966; Renshaw & Asher, 1982; Rubin & Rose-Krasnor, 1992). In terms of ontogenetic adaptation, these diverging goal and motivational structures have considerably divergent implications for psychological and developmental outcomes (e.g., Kasser & Ryan, 1993; Ryan, Deci, & Grolnick, 1995).

Gender

Insofar that boys are more overtly and instrumentally aggressive than girls, as well as more concerned with controlling external events and dominating peers (Block, 1983; Maccoby & Jacklin, 1980; Olweus, 1993; Parke & Slaby, 1983), they may appear to be the primary employers of coercive strategies. On the other hand, girls may be involved in more subtle forms of coercion that are directed more on interpersonal relationships (i.e., relational aggres-

sion: Crick, Casas, & Mosher, 1997; Crick & Grotpeter, 1995; see also footnote 6 on dominance in female primates). Although not traditionally considered as such, relational aggression could be an effective competitive strategy for children (e.g., ''if you don't give me X, I won't be your friend''). Until now, however, most of the work on relational aggression has focused on reactive aggression (i.e., responding to perceived personal violation) rather than goal-oriented aggression that would be more relevant to social dominance issues (Bandura, 1977; Dodge & Coie, 1987). When relational aggression is explicitly considered, it might be that gender differences traditionally associated with social dominance will diminish.

Similarly, there is no *a priori* reason to expect gender differences in prosocial dominance. Girls tend to be more prosocially oriented than boys and are more likely to use prosocial behavior to access resources (Charlesworth & Dzur, 1987). On the other hand, boys are more surgent and competitive (e.g., Block, 1983). Since the prosocial strategy is characterized by surgency mediated by a prosocial orientation, boys and girls may not in the end differ.

The (Nonstagelike) Development of Prosocial Strategies

The strategy approach to social dominance is not a stage model despite the suggestion of stage-like progressions (e.g., ''intermediate stages''). Although the model in Fig. 1 has several attributes in common with stage models, the predictions deriving from a stage model and the proposed model diverge in important ways.

First, the model does not require that all children invariantly exhibit the behavioral change proposed by the model. In fact, the model applies primarily to those who are highly motivated to acquire resources and mobilize behavioral strategies to do so (see Fig. 2). This subset of individuals is in actuality highly context dependent. For example, in a nursery of 2- and 3-year-olds, a 2-year-old may not exhibit resource-directed behavior in the presence of his or her older peers. Yet the behavior of the 2-year-old may change dramatically after the 3-year-olds graduate to preschool (Hawley & Little, in press). Or, alternatively, a child may not be in the position to control resources until the early school years. At this point, prosocially based strategies may be employed, thereby bypassing the coercive strategies altogether.

Second, although coercive strategies are proposed to precede prosocial strategies (based on underlying cognitive structures), children are expected to bifurcate around the ages of 4 to 6. In other words, prosocial strategies do not supersede coercive strategies in all children. At this point, the transition may be highly quantitative as well as qualitative; negative behaviors may reduce in frequency while positive behaviors increase as social norms are internalized. The reasons that some children progress down an apparently maladaptive path undoubtedly entails complex dysfunctional developmental processes (e.g., Parker, Rubin, Price, & DeRosier, 1995).

Two distinct levels of proximate adaptation (vs ultimate adaptation which implies reproductive success) are implicit in the strategy-based model. Both coercive and prosocial strategies are presumed to be functional and adaptive at the superordinate level (resource acquisition and control), but coercive strategies are mostly maladaptive at the subordinant level (social acceptability; see Fig. 1). Undeniably, in terms of resource acquisition, instrumental aggression as a general strategy often works (Coie, Dodge, Terry, & Wright, 1991; Patterson, Littman, & Bricker, 1967). Yet instrumental aggression (vs reactive or hostile) makes a child especially vulnerable to peer rejection (e.g., Coie et al., 1991). A child who bullies peers for their milk money may not win a popularity contest, but he or she gets the money. Furthermore, a history of reinforcement fosters the stability of such behavior especially if the child's primary goals are not social.

Critical Questions

Dominance has not been studied longitudinally in a manner that covers multiple age ranges and includes the critical points of change alluded to above (i.e., transitions from toddlerhood, through preschool, to the first grade). Among the several decisive questions pertinent to the model's validity, three are briefly discussed.

Is there stability in relative dominance rank and what is the source of this stability? Despite the context dependency of dominance rank, the strategy-based model nonetheless suggests a certain degree of stability in individuals' resource orientations. Dominant preschoolers, regardless of how they pursue those goals (prosocially or coercively), were probably dominant toddlers. Although the behavioral manifestations of resource acquisitiveness are expected to change, whatever characteristics of the individual that propel him or her toward resources and into encounters with others over them should be relatively stable. What the source of that stability is at this point is largely conjectural. But it presumably lies within the realms of the individual's personality (e.g., sensation seeking; Zuckerman, 1984), temperament (e.g., persistence; Thomas & Chess, 1983), and motivational systems (e.g., primary control; Heckhausen & Schulz, 1995).

What is the role of context? Although asymmetry in competitive ability mostly reflects personal characteristics, the context specificity inherent in the relational view should not be disregarded. Contextual variables, for example, prevent a dominant toddler from gaining a high rank in a preschool group simply because the characteristics of the peers have also changed (e.g., they are older, bigger, and wiser). An extroverted and uninhibited 3-year-old may be no match for a cool-headed 4-year-old. Nonetheless, to the extent that inhibition and extroversion are stable, that same 3-year-old will probably come to prevail over his or her more tractable peers. As we have seen in the context of our own studies (e.g., Hawley & Little, in press), this rapid rising to the top can happen within several weeks. On the other hand, a more

mild toddler may dominate his or her peers simply because the peers are even more docile. In addition, children exhibiting maladaptive behavior tend to do so especially in highly competitive rather than cooperative contexts (Gelb & Jacobson, 1988). Herein lies a source of complexity when representing social dominance as a relative entity in a context bound world. The study of such complexity requires adopting unique methodologies appropriate for detecting regularities in what first may appear to be disorder (e.g., Hawley & Little, in press).

Do dominant preschoolers bifurcate? Assuming that there is a measure of stability over time, do dominant toddlers come to adopt variegated strategies of resource control as they get older? Do some children come to rely less and less on commanding and toy taking and come to issue more suggestions and help, all in the name of resource control? Clearly these are testable predictions. Gestures of ''helping,'' for example, hasten the transfer of play material from subordinant to dominant children, while simultaneously fostering compliance from the ''helpee.'' In contrast, other children merely take play material away and ignore subordinant children's bids. In this case, subordinant children become frustrated or bored. The degree to which these strategies are correlated in this age group remains to be seen.

Is Leadership in Humans Analogous to Social Dominance in Young Children and Animals?

> Leadership, essentially, means power over other people, and power over others enables [one] to do things, to get things, to accomplish feats that by [oneself], are unattainable. (Fiedler, 1971, p. 1)

This description of leadership is strikingly similar to the representation of social dominance presented here. From an evolutionary perspective, however, one might argue that power over others is not the driving force, but rather power is a consequence of superb competitive ability and the proclivity to use the social world to access the material world. It is difficult to imagine the selective advantage of generalized power without explicit material rewards. Undoubtedly power and resources were paired very early on in our evolutionary history (e.g., Mithin, 1996). Underlying this supposition is the controversial speculation that leaders in human social groups are analogous to alphas in animal groups. Gaining high rank in the social group ensues from differential abilities to control and acquire resources and influence group members. Both enjoy similar intragroup prestige: We watch, emulate, and gravitate toward those who are often charismatic individuals.

From an evolutionary standpoint, the payoffs for being a leader in a human group or an alpha in an animal group are similar. Both have access to resources that subordinates do not and both generally influence how the resources will be distributed within the group. Both have tremendous potential for control, esteem, and material rewards (Betzig, 1986; Eibl-Eibesfeldt,

1989; Hollander, 1985). The primary difference between dominance (as classically defined and in contrast to the arguments presented above) and leadership appears to be how the influence is wielded; social dominance has traditionally implied a coercive facet while leadership has not (e.g., Hollander, 1985). I propose that, in terms of function (i.e., deep structure), they are essentially the same.

Human behavior is not nor has been immune to selection pressures. Without a doubt, our protracted development, extended period of parental care, and unparalleled cognitive complexity are associated with our ability to develop very sophisticated means of living in groups and minimizing conflict within them. Unlike most other species (but not all), we learn rules very early in life that make group living run smoothly: don't steal, share, play nicely together, don't talk back, sacrifice for others, seek approval. Our extensive socialization buffers the impact of our *other* natural tendency, one that follows the basic biological law dictating that those with access to resources (material and social) fare better in the long run than those without (Darwin, 1859).

The role of social and cognitive complexity. But are we really so different from infrahuman species? In actuality, the nature of dominance varies across species in ways we understand very little. In fact, leadershiplike dominance and aggressive dominance have been differentiated as two distinct entities in the animal domain (Eibl-Eibesfeldt, 1989; Hinde & Datta, 1981), but leadership as an organizational feature of group living mammals has not been the target of formal study (but see de Waal, 1982) and certainly not in terms of operationalization and quantification. To be sure, ''leadership'' or some analogous construct will not be found in cognitively simple species with relatively uncomplicated social orders. Leadership might be found, however, in species that are cognitively and socially complex—those that have maximal learning opportunities, extended parental care, and rich social orders. Descriptions of chimpanzees (*Pan troglodytes:* de Waal, 1982; Goodall, 1988), bonobos (*Pan paniscus:* de Waal, 1995), and elephants (*Elephas maximus:* Hawley, 1994; McKay, 1973 and *Loxodonta afrikana:* Douglas-Hamilton & Douglas-Hamilton, 1975; Moss, 1988) highlight this distinct and provocative possibility.

One unconventional way to frame this issue is to postulate that dominance structures change in nature from the coercive patterns of simple species to elaborated structures characterized by deference and respect in more complex species. That is, species with limited cognitive capacities and learning opportunities may also be limited in their means to compete or, alternatively, limited in their need to accommodate other group members. Long-lived highly social species, on the other hand, may be pressured (ultimately and proximately) to be more other-oriented. In light of the remarkable development of our own social-cognitive abilities, might human dominance behavior

similarly change as we progress from relatively simple social structures (e.g., a group of toddlers) to far more complex ones (e.g., communities)?

CONCLUSIONS AND FINAL THOUGHTS

The inspirations underlying the ideas expressed in this paper span multiple distinct, yet integrated, levels. At the first level, the underlying fundamental notion is that the need for limited resources has played a critical role in the phylogenetic development of our behavior within social groups. The ways we meet our needs are mediated by the presence of others. The most adaptive way to get what you need is to be a fair player, to consider others, to compromise—to be a good group member. Yet other less socially oriented strategies persist because, if applied shrewdly (i.e., in ways that avert group rejection), they can be highly functional. At the second level, I cast these variegated strategies into a life span perspective by tying them to underlying skills, orientations, and cognitive structures that develop in early childhood. Various aspects of children's behavior and their peer relationships promote the plausibility of this model.

Ontogenetic Implications

From a developmental point of view, the proposed perspective suggests that dominance and general acquisitiveness in toddlers may not be maladaptive. Given the stage of cognitive development, assertive toddlers have limited means to negotiate possession of a cherished toy. Taking is an effective alternative. Such a behavior pattern may in fact indicate a healthy assertive approach to the world that may lead to material rewards that ultimately foster growth and survival. By the time children enter preschool, the socialization process is well underway and peers help define what is and is not effective, what will foster social ties, and what will break them. Those who are adapting well to the new social order are learning to control impulses effectively, to regulate their emotions, and to influence others in a more acceptable and subtle manner.

Phylogenetic Implications

Is leadership, in the uniquely human sense, a cognitively advanced and socially acceptable means to dominate in the traditional biological sense? Flying in the face of this notion is that ''leader'' conjures strong images of a socially competent, altruistic, and charismatic individual. Many individuals in leadership positions possess these admirable qualities, as do alpha animals. This fact does not preclude that leaders may also be ultimately motivated by resource control in an evolutionary sense, as are alpha animals. The distinction between these two levels of analysis (proximate and ultimate) is critical, but yet is all too often misunderstood or overlooked. Prosocial behavior manifesting in ontogeny must benefit the organism relative to other

available strategies in order to maintain a selective advantage (Dawkins, 1989; Williams, 1966). This fact, of course, makes altruism and cooperation no less cherished by society at large.

Social dominance inevitably results when individuals are unequal in their ability or motivation to acquire and control resources. In many species, dominant individuals are respected, cherished, admired, and feared. In many respects, such power asymmetries provide the basis of acceptable behavior in other domains such as who is approachable and who is not, who may be greeted informally, and who requires more care. Has human social behavior progressed beyond such constraints? Clearly, humans are capable of intense competition and appear highly motivated to acquire resources. But does this acquisitiveness play a central role in organizing our social worlds? The possibility is indeed difficult to deny.

If such is the case, it would be judicious to ask how these forces impact the developing self. Individuals develop in the context of others who are all striving to fulfill their needs and desires in what is often a zero-sum game. Additionally, stable structures reflecting win–loss patterns appear in children's groups even before other structures emerge (e.g., friendships). Conceivably, the influence that early social dominance has on personal development may be long-lasting. Not unlike competition within the family (e.g., Sulloway, 1996), competition in the peer group could shape a child's sense of personal control, future efficacy in the social and material domains, and personal competencies and interests. Yet when we shrug and say, ''you win some, you lose some,'' we may be underestimating the potential significance of these experiences on the developing child. Interdisciplinary exploration may illuminate the realm of human behavior where resource-striving and gregariousness collide.

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