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"Dominance and Deception in Children and Adults: Are Leaders the Best Misleaders?"

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Dominance and Deception in Children and Adults: Are Leaders the Best Misleaders?

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Relationships between dominance and nonverbal deception skill were investigated in preschool children (Study 1) and in undergraduate men and women (Study 2). Subjects were assessed for dominance during peer group interactions. Later, they encoded and decoded deceptive messages. Raters assessed the credibility of each subject's encoded message using nonverbal cues alone. Ability to encode credible, deceptive messages predicted dominance in preschool children and men but not women. Decoding deception accurately from nonverbal cues was unrelated to dominance. Videotapes of subjects' performances were examined for nonverbal behaviors predictive of deception success. Very young children successfully masked their deception by smiling. Successful adult deceivers made eye contact with the listener and inhibited smiling while delivering deceptive messages. Overall, results were generally consistent with a social skills approach to dominance in which manipulative ability is believed to be integral to achieving and maintaining social power.

Despite the exceptional verbal abilities characteristic of our species, we rely heavily on nonverbal cues when judging our fellows (DePaulo, 1992; Keating, 1994). The power that nonverbal cues wield in interpersonal perception has been demonstrated by researchers probing public reaction to televised political debates. Many suggest that public opinion can be swayed as much by the candidates' appearance, demeanor, and facial expression as by the content of their verbal arguments (Exline, 1985; McHugo, Lanzetta, Sullivan, Masters, & Englis, 1985; Patterson, Churchill, Burger, & Powell, 1992). Thus it appears that the information available through nonverbal channels is essential to the successful portrayal of leadership and the communication of social dominance.

Our reliance on nonverbal messages suggests that human and nonhuman dominance systems operate in similar ways (Rajecki & Flanery, 1981). The cross-species record reveals that primate dominance systems are largely dependent on subtle forms of social manipulation rather than overt physical aggression (Hartup, 1983; Mazur, 1973; Mitchell & Maple, 1985; Shantz, 1987; Western & Strum, 1983). Primatologists report that dominant animals reveal manipulative, communicative skills superior to those of subordinates (de Waal & Rossmalen, 1979; van Lawick-Goodall, 1971). Developmentalists find that dominant children accrue advantages over others through manipulative negotiations (Miller, Danaher, & Forbes, 1986) and strategic affiliations (Charlesworth & LaFreniere, 1983; Jones, 1984; Strayer & Trudel, 1984). These reports are compatible with the social skills approach to primate dominance, in which manipulative ability forms a foundation for the achievement of social power and status (Mitchell & Maple, 1985).

Several theorists have argued that the most effective manipulative strategies for animals and humans include the ability to disguise the truth about intentions or feelings (Buss, Gomes, Higgins, & Lauterbach, 1987; Dawkins & Krebs, 1978; Ekman, 1985; Otte, 1974; Wallace, 1973). Perhaps dominant or influential individuals are successful manipulators partly because they

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are unusually adept at the nonverbal management required to conceal truth and present false information as if it were true. Proceeding from this premise, the present study investigated the relationship between dominance and the ability to encode credible, deceptive messages nonverbally.

Some studies suggest that the nonverbal deception skills of dominant individuals exceed those of individuals who are not inclined to be dominant. Riggio and Friedman (1983) used a self-report measure to assess dominance in adult subjects, who were then videotaped as they presented deceptive messages. Judges who viewed the videotaped performances and heard subjects' voices (but not their words) were most often deceived by those who scored high on the dominance measure. Analyses of the subjects' behavior suggested that dominant individuals concealed signs of nervousness when they lied (Riggio & Friedman, 1983). Other researchers reported that adults (Geis & Moon, 1981) and children (Braginsky, 1970) who scored high on a dominance-related measure, Machiavellianism, were highly successful deceivers. We therefore hypothesized that the ability to encode a believable, deceptive message would predict dominance.

We also tested a secondary, more speculative hypothesis involving the decoding or detection of deception. Snodgrass (1985) reported that subordinate individuals have a greater ability than dominant individuals to sense another person's feelings. Compared with individuals whose dominance shields them from unwelcome interactions, subordinates are especially subject to the advances of other individuals (Henley, 1977; Patterson, 1985) and may have developed a special vigilance for the nonverbal cues that accurately signal people's intentions and feelings (Snodgrass, 1985). A similar hypothesis has been advanced to explain why women are often more accurate than men when decoding nonverbal cues (Henley, 1977; Henley & LaFrance, 1984; cf. Hall, 1987). Perhaps individuals with relatively low dominance not only are exceptionally able decoders of feelings but also are most able to discriminate felt from feigned nonverbal messages. If better decoders make better detectors of deceit, it seemed reasonable to predict that dominance should be inversely related to the accurate detection (decoding) of deceit.

Thus we addressed two issues. The first distinguished the nonverbal encoding skills characterizing individuals who differ in dominance: Could dominance be predicted directly from nonverbal deception skill? Second, was dominance inversely related to detection skill? Underlying both issues was the premise that dominance emerges as a consequence of relationships rather than traits (see Ellyson & Dovidio, 1985) and that it is moderated by social skill.

We investigated the relationship between dominance and nonverbal skill in two subject populations: preschool children in Study 1 and undergraduate students in Study 2. For all subjects, the assessment of dominance was based on peer interactions. Subjects in each study were asked to present (encode) deceptive answers during a taste-test procedure and to detect (decode) deception from the behavior of peers who performed the same taste-test task. In addition, we probed whether particular nonverbal styles distinguished the deceptive performances of subjects who participated in Studies 1 and 2.

Correlational analyses determined whether subjects' dominance could be predicted directly from their ability to nonverbally enact a compelling deception and inversely from their accuracy at detecting nonverbal signs of deception in others. Children's age and sex, known correlates of dominance, served as control variables. Subjects' physical attractiveness was also included as a control because appealing appearances have been linked to attributions of dominance and honesty (Berry & McArthur, 1986; Keating, 1985) and to decoding skill (DePaulo, Tang, & Stone, 1987).

The limitations of our approach included the correlational nature of the data. The strength of our research was that the assessment of dominance was based on behavior occurring in actual group situations. In addition, comparable methods were used to test the nonverbal skills of subjects who spanned different age groups. Finally, we relied on multiple regression analyses to assess the independent predictive power of deception encoding and decoding skills and to statistically control variables like age, attractiveness, and truth-encoding skill that could have confounded relationships between the variables of primary interest.

STUDY 1

Method

Subjects. Participants were 31 male and 26 female preschool children aged 41 to 75 months (M = 57.28 months) who were recruited from three nursery schools located in neighboring upstate New York communities. Permission for the children's participation was obtained through parental consent forms that detailed procedural aspects of the study. Eight children either changed residence or attended school so irregularly that not all measures were administered. The number of subjects was therefore reduced to 49.

Procedure. Over a period of 10 weeks, each subject encoded a deceptive and a truthful message on videotape, decoded (detected) the deceptive messages of other children, and (for purposes of a different experiment) completed several cognitive tests. Subjects' domi-

nance was assessed during free play periods. The three female experimenters involved in the collection of encoding and decoding data were unaware of the children's dominance scores.

Nonverbal encoding and decoding tasks. A procedure designed by Feldman, White, and Lobato (1980) was used to elicit truth and deception. Subjects sampled two drinks, one sweet and one sour, in random order. Verbal and behavioral confirmation that subjects liked the sweet drink and disliked the sour drink was obtained. Then subjects were asked by the experimenter to convince an adult assistant that both the sour drink and the sweet drink tasted good. Thus, the onus for deceiving rested with the experimenters, not with the child (cf. Lewis, Stanger, & Sullivan, 1989). A color videotape camera that stood in full view recorded each subject's truthful and deceptive descriptions of the drinks. A lengthy debriefing period followed. The children were asked to tell the assistant which drink they truthfully preferred and were thanked for telling the truth. A discussion about the advantages of telling the truth ensued.

Taped segments containing the first 20 seconds of each child's truthful and deceptive responses were edited in random order from the original videotape onto a pair of master tapes for each school. Each child's two performances were separated, however, so that no child appeared more than once on a master tape. Half the children on each tape told the truth and the other half disguised it. Groups of undergraduate observers (n = 228) viewed different master tapes without the audio channel and judged each child as truthful or deceptive after being given basic information about the context in which the videotapes were made. Each child was given an encoding score representing the percentage of observers who believed the subject was truthful when he or she was actually pretending to like the sour-tasting drink.

A week later, subjects were given the opportunity to distinguish deception from truth in other children. A stimulus tape showing 12 preschool girls and boys from a different school who were not participants in our study was constructed in the same fashion as the subjects' tapes in the taste-test task. Half of the 12 stimulus preschoolers were shown behaving truthfully and half were shown deceiving. Subjects observed the silent videotape individually and judged whether each child on the tape was "telling the truth and really liked the drink" or whether the child was "trying to fool you and only pretending to like the drink." Decoding scores were based on the number of times deception and truth were successfully identified in the stimulus tape. High scores on the decoding task indicated that subjects identified deceptive and sincere communications accurately. Any subject identifying all messages as deceptive would have scored at chance level.

Behavioral dominance. A focal child procedure was used to gather data for the measurement of dominance. Subjects were chosen at random and observed during free play, typically for six 10-min periods.[1] During that time, the behavior of the subject and the names of any interactants were recorded. Three categories of dominance behaviors were defined: physical assertion (e.g., pull, hit, chase, displace, take object), dominance gestures (e.g., stare, intentional hit, pointing), and verbal assertion (e.g., command, ridicule, tease). Three categories of submissive behavior were also recorded: follows a command or physical directive (e.g., obeys an order, has something taken away or is made to give it up), submissive gestures (e.g., cry, cower, smiles with downward eye evasion), and verbal submission (e.g., apology, mumbles). For 20% of all observations, pairs of trained observers did the recording. Pearson correlation coefficients between the frequencies of behaviors reported by the two observers were .86, .96, and .98 for the three categories of dominance behavior and .82, .79, and .94 for the three categories of submissive behavior.

Bramblett's (1981) method of determining "status scores" was used to construct the dependent variable. For each school, a matrix of all classmates was compiled. Counts of behavioral "wins" and "losses" between specific subject pairs were recorded within its cells. From the focal child's point of view, wins included initiated physical assertions and successful object/position struggles and gestural or verbal directives—in short, getting one's way. Losses included compliance with physical, gestural, or verbal directives, having something (an object or position) taken away, and responding with gestural or verbal submission. Status scores reflected the number of classmates a particular child dominated (or was dominated by) 75% of the time or more (Bramblett, 1981). A +1 was assigned to the subject each time that child's wins outnumbered losses 75% of the time or better against a particular classmate. Losses of 75% or more earned subjects a –1. Data that fell outside the win-loss criteria were assigned a zero. For each subject, status points were summed as our measure of dominance.[2]

Results

Because dominance is a function of particular relationships (Bernstein, 1981), each child's social standing was assessed relative to his or her own group. To accomplish this, dominance scores were standardized within school groups. Scores for encoding and decoding were also standardized within schools so that relative skill, not absolute ability, was used to predict dominance. The data were collapsed across schools after preliminary multiple regression analyses showed that this variable produced no significant main effects or interactions, $ps > .20$.

Multiple linear regression models tested whether nonverbal encoding and decoding scores predicted dominance. The models also incorporated three typical correlates of dominance as control variables: subjects' age, sex, and attractiveness. Additional analyses included the percentage of raters who believed each subjects' *truthful* encoding. The latter measure was used to distinguish subjects' ability to appear truthful when telling the truth ("truth") from their ability to appear truthful when disguising it ("deception"). Because we hypothesized that deception-encoding skill specifically (rather than encoding skills generally) would predict dominance, we wanted to be sure that dominant individuals were not just generally credible communicators who appeared sincere when they lied for the same reasons that they appeared sincere when they told the truth. A single, unitary factor—say, confidence—could underlie just such a general communicative skill. Accordingly, we controlled for this possibility by measuring truth-telling encoding ability and "subtracting," or partialing, it from the dominance deception encoding relationship by hierarchical regression analyses.

Table 1 presents the zero-order correlations between dominance, nonverbal skills, and the control variables for preschool subjects. As predicted, the ability to encode a compelling deception was positively and significantly correlated with dominance. Decoding deception, however, was not reliably associated with dominance (see Table 1). Of the control variables, only age was significantly associated with dominance: Older children generally outranked younger ones.

Simultaneous, multiple linear regression analyses were performed to test the hypothesis that nonverbal encoding and decoding skills could predict dominance independently from other correlates of social status. Dominance scores were the dependent variable. Predictor variables included subjects' ability to encode and decode deceit and the control variables of attractiveness, age, and sex. All two-way interactions between the latter two variables and each other predictor variable were initially entered into equations but subsequently dropped because they did not contribute significantly to the explained variation in dominance, $ps > .20$. Because there were no significant interactions with subject sex, a single regression analysis was performed for girls and boys.

The regression model comprising the measurements of encoding and decoding ability, age, sex, and attractiveness explained 22% of the variance in dominance, $R = .47$, $F(5, 43) = 2.46$, $p < .05$. Statistics for each predictor variable are displayed in Table 2. As shown in Table 2, the ability to encode deceit contributed independently, though modestly, to the prediction of dominance. No evidence emerged to support the projected

TABLE 1: Correlations Between Measures of Preschoolers' Dominance, Nonverbal Skill, and Control Variables

	Decode	*Attractive*	*Age*	*Sex*	*Truth*	*Dominance*
Deception	.22	.12	.26	−.24	.26	.33*
Decode		−.26	.04	−.09	.27	.07
Attractive			−.02	.06	−.03	−.05
Age				−.12	−.01	.39**
Sex					.01	−.02
Truth						.16

NOTE: $N = 49$.
*$p < .02$; **$p < .004$.

inverse relationship between dominance and decoding ability. Age was an important predictor of dominance, but attractiveness and sex were not.

Perhaps the relationship between dominance and deception was simply a consequence of an overall "believability" effect, in which dominant individuals appeared generally sincere whether encoding deceit or truth. The zero-order correlation between Deception and Truth (see Table 1), though not significant, was positive, perhaps reflecting some overlap in these skills. To test this possibility, the percentage of raters who believed each subject's truthful presentation (Truth) was partialed from the dominance-deception relationship. Statistical control over truth encoding reduced the dominance-deception correlation to $r(46) = .28$, $p < .055$, indicating that although there was some overlap in the predictive power of the two encoding skills, the relationship between deception and dominance remained largely independent of it. That is, what best distinguished dominant individuals from their lower ranking peers was the specific ability to produce convincing deceptions, not simply an ability to appear sincere when communicating truth or deceit.

We further decomposed the dominance-deception relationship by performing a hierarchical regression analysis in which the three control variables and truth encoding were entered as predictors of dominance before deception scores. Under this analytic strategy, any explanatory power that truth-telling and deception shared would be "subtracted" from deception and assigned to truth. Age, sex, and attractiveness were entered first, as a set. The subsequent inclusion of truth-encoding scores failed to contribute any predictive power, R^2 change = .01, $F(1, 43) < 1$: Subjects' ability to appear earnest when telling the truth was unrelated to their dominance. With the final addition of deception-encoding scores, the prediction of dominance improved by 5%. In combination with our modest sample size, however, this increase fell short of statistical significance, R^2 change = .05, $F(1, 43) = 2.61$, $p < .11$.

Nevertheless, across all analyses, age and deception skill clearly remained the most important predictors of

TABLE 2: Beta Weights and Significance Tests for Variables Predicting Preschoolers' Dominance

Variable	*Beta*	T	p
Deception	.28	1.87	.068
Decode	–.02	–0.11	.914
Age	.33	2.38	.021
Sex	.09	0.65	.519
Attractive	–.08	–0.58	.567

NOTE: $N = 49$.

preschool dominance. With the leveling of many age-dependent dominance factors by adulthood, it seemed likely that deception skill by itself would emerge as a potent predictor of dominance among adults.

STUDY 2

Method

Subjects. An initial sample of 96 undergraduate psychology students from a small northeastern university performed a group problem-solving task, after which peer ratings of social dominance were collected. A subset of 31 males and 30 females later returned to the laboratory and completed the videotaped portion of the procedure. Ninety-eight additional undergraduates (54 males and 44 females) judged the videotapes made by these subjects. All students received laboratory credit for their participation.

Procedure. The assessment of each subjects' dominance was derived from the concluding segment of a task-oriented group processes study (Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993). That study required ad hoc groups of six same-sex individuals to discuss solutions to the standard "winter survival" problem, thereby reaching consensus on a list of items essential to surviving a plane crash occurring in the frigid North American wilderness. Following 30 min of group interaction, the students individually rank-ordered the six individuals in their group, including themselves, from 1 (most dominant) to 6 (least dominant). The ratings were based on "how dominant and influential" each member was during the interaction. Agreement among the rankings of group members was generally high. The median interclass correlation for female groups was .91 and for male groups was .83 (Winer, 1971).

A dominance score was calculated for each group member by averaging the dominance rankings submitted by his or her peers. The scale was reversed so that higher scores indicated greater dominance.

Several weeks after their participation in the group processes experiment, all students from the initial pool received a request to participate in a different study. They were not told that this study related to the earlier one. Sixty-four percent of those from the group processes experiment returned individually to the laboratory.

This second procedure was presented as a comparison of various advertising media. The subject sat at a table cluttered with props: pencils, pads of paper, a microphone, and a tape recorder. A video camera and monitor were positioned across the room in full view. Each subject was told that he or she would be asked to communicate a message through one of three simulated versions of media formats: television (a videotaped message), radio (a tape-recorded message), or magazine copy (a written message). The subject then drew one of three numbered cards that ostensibly assigned him or her to one of the three formats; actually, all cards assigned the subject to the television (videotaped) format.

Subjects were informed that they would be videotaped while presenting two brief messages, one truthful and one deceptive, which would be judged by other undergraduates for their effectiveness and believability. After signing informed consent documents, subjects privately tested the products they would be asked to compare—two brands of orange drink. One concoction was pleasant tasting and the other was not. Subjects recorded which drink they preferred. They then chose cards to determine whether they would first tell their true feelings about which drink they liked better or whether they would first pretend that the drink they really liked *less* was the one they liked better. An experimenter who was blind to the truth/deceit condition and to dominance scores videotaped subjects' heads and shoulders as they gave deceptive and truthful responses to standardized questions about which drink they liked better and why.

The videotaped sessions were edited onto four master tapes, two portraying the 31 male subjects and two portraying the 30 female subjects. The first 20 s of each performance was incorporated on the master tapes with 10 s of blank screen between performances. Each tape contained approximately equal numbers of subjects falsifying and telling the truth in a randomly determined sequence. Subjects who gave truthful responses on one tape were shown disguising the truth on the other.

Ninety-eight additional undergraduates in groups of 5 to 10 independently judged the four videotapes for appearances of deceit. Groups of judges viewed one female and one male tape in a randomly determined order, without the audio channel. Judges were asked to decide whether each person was deceiving or telling the truth, using nonverbal information alone. From these dichotomous judgments, a deception-encoding score for each subject was obtained by calculating the percentage of judges who believed the subject's deceptive message.

After completing their videotaped messages, subjects viewed a silent videotape showing 12 unfamiliar students

(6 men, 6 women) performing the same taste-test task described above. The subject's accuracy in distinguishing deceit from truth was assessed by adding the number of times he or she correctly detected deception and identified truth. Thus subjects who scored highest on the detection task discriminated deceit *and* truth accurately (cf. DePaulo et al., 1987). In this manner, subjects who misidentified truth as deceit were penalized for their error.

At the conclusion of the session, subjects were thanked for their participation and debriefed.

Results

Distributions of dominance scores were compared to determine whether scores for the subset of males and females who completed the study by returning for the deception and detection tasks were representative of those characterizing the original subject sample. The mean, standard deviation, and range of dominance scores for the entire sample were 3.56, 1.4, and 5, respectively. Distributions for returning subjects were comparable. Dominance scores for our male subjects produced a mean, standard deviation, and range of 3.52, 1.43, and 4.8, respectively. For female subjects, these statistics were 3.6, 1.46, and 5, respectively. Thus completion of the study appeared unrelated to dominance.

Multiple linear regression/correlation analyses determined whether dominance could be predicted from nonverbal encoding and decoding skills. Separate regressions were performed for males and females because preliminary tests showed that interactions with subject sex contributed to the explanatory power of regression models, $ps < .05$. Because attractiveness has been related to dominance (Keating, 1985) and to the accurate detection of deceit (DePaulo et al., 1987), attractiveness ratings served as a control variable. As in Study 1, we included a measure of each subject's ability to deliver a credible, truthful message by calculating the percentage of raters who believed the subject's truthful message on the videotape.

Table 3 presents the zero-order correlations between measures of nonverbal skill, attractiveness, and dominance separately for male and female subjects. Inspection of Table 3 reveals the predicted positive association between deception-encoding skill and dominance for males but not for females. The predicted indirect relationship between decoding skill and dominance was not statistically significant for either males or females. Scores for deception and decoding deceit were negatively associated for males. The credible encoding of truthful messages was related to deception-encoding ability and to dominance for males (see Table 3).

A simultaneous, multiple linear regression analysis was performed to test the hypothesis that dominance could be predicted independently from the ability to encode and decode deception. Predictor variables included subjects' deception and decoding scores as well as ratings of their physical attractiveness as a control. Table 4 depicts the results of this analysis separately for male and female subjects.

TABLE 3: Correlations Between Measures of Nonverbal Skill, Attractiveness, and Dominance for Adult Males and Females

	Deception	*Decode*	*Attractive*	*Truth*	*Dominance*
Deception		−.40*	−.24	.52**	.53**
Decode	.05		.02	−.22	−.21
Attractive	.09	−.15		−.26	.15
Truth	.32	−.27	−.05		.47**
Dominance	.15	.06	.07	.26	

NOTE: Correlations for males ($n = 31$) appear above the diagonal; those for females ($n = 30$) appear below the diagonal.
*$p < .02$; **$p < .007$.

The regression analysis for male subjects, $R = .60$, $F(3, 27) = 5.08$, $p < .007$, explained 36% of the variance in males' dominance scores. Examination of Table 4 reveals that males' ability to nonverbally encode successful deceptions and, marginally, their attractiveness were independent predictors of dominance. Decoding skill failed to contribute significantly to the prediction of dominance (see Table 4). For females, the comparable regression analysis explained less than 3% of the variance in dominance, yielding an $R = .17$, $F(3, 26) < 1$. Table 4 shows that neither the ability to encode or decode deceptive messages nor attractiveness was significantly related to female dominance ($ps > .10$).

Were dominant male subjects especially able deceivers, or were they generally effective communicators whether disguising or revealing the truth? Note that, for males, the zero-order correlation between truth-telling ability and dominance was unexpectedly significant (see Table 3), indicating that high-ranking individuals were effective communicators not only when they deceived but also when they told the truth. Moreover, men's deception and truth-telling abilities were predictable from each other, suggesting substantial overlap in these skills (see Table 3). To investigate whether deception skill per se predicted dominance, we partialed the percentage of raters who believed male subjects when they were telling the truth from the dominance-deception relationship. Deception skill remained a statistically significant, independent predictor of dominance for males, $r(28) = .40$, $p < .044$. Thus deception skill contributed unique explanatory power above and beyond anything related to truth-telling effectiveness.

As in Study 1, we pursued the relationships among dominance and the abilities to encode deceit and truth found for males by employing a hierarchical regression analysis in which the control variable, attractiveness, was

TABLE 4: Beta Weights and Significance Tests for Variables Predicting Male and Female Dominance

Variable	*Beta*	T	p
Male Subjects			
Deception	0.61	3.51	.001
Decode	0.03	0.17	.864
Attractive	0.29	1.85	.076
Female subjects			
Deception	0.14	0.71	.485
Decode	0.06	0.30	.770
Attractive	0.06	0.31	.756

NOTE: n for males = 31; n for females = 30.

entered first, followed by encoding scores for truth and then deceit. Using this analytic strategy, any predictive power that the two encoding skills shared was removed from deception and assigned to truth (rather than to deception). The introduction of truth-encoding scores marginally increased explained variance in dominance scores, R^2 change = .07, $F(1, 27) = 3.68$, $p < .07$, indicating that measurement of the skills incorporated by both credible truth telling and deception served as a modest predictor of dominance. However, deceit encoding, entered next, boosted prediction by a substantial 13%, $F(1, 27) = 6.30$, $p < .001$. Thus performance on the deception task tapped more than just a general communicative ability. Moreover, for male subjects, the ability to *disguise* the truth predicted dominance over and above the marginal influences of attractiveness and abilities related to truth telling.

What were dominant adult males doing to cloak their deceptions so successfully? Did high-ranking preschoolers engage in rudimentary forms of similar nonverbal disguises? Next, we explored the nonverbal behaviors that distinguished good from poor deceivers.

ANALYSES OF NONVERBAL BEHAVIOR

Method

Undergraduate raters independently assessed the videotapes of the 49 children and 61 adults from Studies 1 and 2 for nonverbal behaviors associated with deceit. Raters were unaware of subjects' dominance rankings and whether they viewed truthful or deceptive encodings. On the basis of previous research (e.g., Ekman & Friesen, 1969; Exline, 1985; Lewis et al., 1989; Riggio & Friedman, 1983), frequency counts were made for four categories of nonverbal behavior linked to deceit and/or tension leakage: (a) smiling, (b) gaze shifts, (c) postural shifts (including rocking, head tilting, shifting body position, and swaying), and (d) self-manipulation (including touching self or clothing, as when scratching, rubbing, lip-licking, or fiddling with clothing or with hair or other body parts). In addition, we measured (e) the total amount of time each subject maintained eye contact with the experimenter during each 20-s message as well as the proportion of time subjects maintained eye contact (f) while speaking and (g) while listening.[3] Interrater reliabilities for each nonverbal measure assessed during deceptive and truthful performances were very good both for children (rs ranged from .84 to .95) and for adults (rs ranged from .87 to .98).

Results

Zero-order and partial correlations were computed between nonverbal behavior scores and deception success (the percentage of judges who were duped by subjects' deceptive encoding). Zero-order correlations could reveal cues that perceivers intuitively used as "lie detector tests." But were perceivers' intuitions correct, or were their suspicions aroused by activities that subjects were as likely to display when they told the truth as when they lied? Subtracting, or partialing out, behavioral counts made when subjects told the truth (a kind of baseline measure) would yield partial correlations between nonverbal activities displayed during deception and deception success that could reveal whether subjects behaved differently when lying than when telling the truth. To explore developmental trends in nonverbal behavior, correlations were computed separately for younger (less than the mean age of 57.28 months) and older children.

Smiles. Smiling had very different relationships with deception success for younger and older children and for adults: High rates of smiling during deception were associated with deception success for the youngest children, $r(23) = .42$, $p < .04$, but not for the older group, $r(24) = -.05$. Adult smiling, however, made perceivers suspicious: High rates of smiling were associated with poor deception success, $r(59) = -.31$, $p < .02$.

To establish whether subjects altered their smiling habits when deceiving, we partialed from its relationship with deception success the frequency of smiling while truth-telling, as a kind of baseline measure. This analytic strategy could reveal whether nonverbal behavior changed in the context of deception (relative to the context of truthfulness). Partial correlations for the youngest children resembled their zero-order counterparts: Frequent smiling while lying, above and beyond baseline (truthful) smiling rates, improved deception success, $r(22) = .42$, $p < .05$. For older children, this relationship was also positive but nonsignificant, $r(23) = .23$, $p > .10$. Once baseline smiling rates were controlled for adults, the partial correlational analysis revealed that *decreased* smiling tended to improve their deception success, $r(58) = -.23$, $p < .08$. These analyses indicated that the very youngest children successfully masked their deception by increased smiling whereas

adults who inhibited smiling during deceit appeared sincere to perceivers.

Gaze shift and eye contact. When judging adult credibility, perceivers intuitively used gaze as a lie detector test. Zero-order correlations between gaze shift scores and deception success yielded a trend that was consistent with earlier reports (i.e., Riggio & Friedman, 1983): Adults who frequently shifted their gaze while lying aroused suspicion and were among the least successful deceivers, $r(59) = -.24$, $p < .06$. Perceivers not only associated frequent gaze shifts with adult deceptiveness, they also intuited an association between eye contact and honesty—especially when adults were in fact deceiving. Although the correlation between eye contact and the believability of truthful messages was not significant, $r(59) = .15$, $p > .24$, the amount of time adults gazed at the experimenter during deception predicted deception success, $r(59) = .32$, $p < .02$ (as Riggio & Friedman, 1983, reported), even when baseline eye contact during truthful messages was partialed from the relationship, $r(58) = .34$, $p < .009$. During deception, increased looking at the experimenter while speaking (controlling for baseline looking-while-speaking during truth telling) was particularly effective in lending an appearance of sincerity for male, $r(28) = .33$, $p < .08$, but not for female deceivers, $r(27) = .14$, $p > .20$. Looking while listening to the experimenter during deceptive episodes did not relate to the perceived sincerity of adults, $ps > .20$.

Perceivers did not rely on any form of gaze shift or eye contact as a cue for deception in either younger or older children, $ps > .20$.

Postural shifts and self-manipulation. Deception success did not relate to our counts of postural shifts or of self-manipulation for either children or adults, $ps > .10$. In large part, these nonverbal behaviors would not have been reliable cues for deception, because those who exhibited them while lying tended to exhibit them while telling the truth (rs ranged from .33 to .61, $ps < .07$). There were two exceptions to this generalization: Younger children's postural shifts while truth telling did not predict their postural shifts during deceit, $r(23) = .16$, $p > .20$, and, on average, they exhibited more of them when deceiving than when telling the truth. Women's self-manipulation frequencies during truthful messages did not correspond to those during deception, $r(28) = .12$, $p > .20$, and, on average, they displayed more of them while deceiving than while telling the truth.

Summary of nonverbal cues. In sum, perceivers were duped by the smiles of very young children who apparently masked their deception by smiling. Successful adult deceivers were distinguished by the inhibition of smiling and the amount of eye contact they maintained while delivering their deceptive messages.

GENERAL DISCUSSION

The ability to nonverbally disguise deceptive messages as truthful communications predicted dominance among preschoolers and adult males. Consistent with our hypothesis, dominant individuals from these groups were better than subordinates at managing their nonverbal performances so as to appear sincere when they were being deceptive. For adult males, nonverbal deception skill predicted dominance above and beyond the marginal influences of physical attractiveness and truth-telling skill. Thus dominant males were more than good communicators: They were able deceivers. Although the results for children were not as strong as those for men, deception skill remained an independent predictor of preschool dominance regardless of children's age, attractiveness, or gender. However, no support emerged for the hypothesis that individuals low in dominance were superior discriminators of nonverbal cues to deception. Apparently, good and poor detectors of deceit may frequent any status niche.

The social mechanism generating differences between the deception-encoding skills of dominant and submissive individuals may involve social anxiety (Schlenker & Leary, 1982). Highly socially anxious individuals apparently perceive poorer receptivity on the part of those they interact with than individuals low in social anxiety do (Pozo, Carver, Wellens, & Scheier, 1991). Theoretically, anxiety aroused by the questionable success of self-presentation produces behavior that hinders communication (Schlenker & Leary, 1982). Consistent with this possibility, researchers have found that socially anxious adults produce less credible communications than those low in anxiety, whether anxiety is measured by paper and pencil (Riggio, Tucker, & Throckmorton, 1987) or created by experimental manipulation (DePaulo, LeMay, & Epstein, 1991).

Asking subjects to knowingly deliver false messages, we thought, would magnify differences in the nonverbal management skills characteristic of individuals occupying different status niches. Because dominant individuals were influential communicators among their peers, they may have expected a more successful self-presentation than subordinates did when deceiving. As a result of experiencing less social anxiety, dominant individuals were expected to reveal less tension nonverbally and thus appear more honest than those who gravitated toward subordinate peer group status.

Were dominant individuals similarly advantaged by positive expectations even when delivering truthful messages? Perhaps a single, underlying "confidence" factor might explain why success at deception, success at truth telling, and dominance intercorrelated, at least for men (see Table 3). Our analyses indicated, however, that any such unitary explanation would capture only a small

portion of the dominance-deception relationship. After removing the overlap in predictive power shared by deceptive and truthful encoding skill, our measurement of deception skill contributed unique explanatory power over and above that related to truth-telling ability. For male subjects, the ability to *disguise* the truth was the single most powerful predictor of dominance.

Exploration of the nonverbal styles that made children and adults appear sincere revealed developmental differences. The youngest group of children appeared to successfully mask deception by smiling, confirming other reports (Lewis et al., 1989). As others have found (Riggio & Friedman, 1983), perceivers apparently viewed adult smiling and gaze shifts with suspicion: Adults who exhibited these behaviors appeared insincere in some cases whether they were telling the truth or lying. The most successful adult deceivers inhibited smiling and maintained eye contact with the person they were trying to deceive as they delivered false information.

Deception success predicted dominance for men, boys, and girls but not for women, suggesting the possibility that the communicative skills that enhance social status among females change over time. Sex differences in the development of peer relationships are consistent with this possibility. Self-reported intimacy (including honesty) in girls' relationships increases steadily over the school years, whereas boys' intimacy lags behind (Jones & Dembo, 1989; Sharabany, Gershoni, & Hofman, 1981). As intimacy increases for female friendships, so may the importance and effectiveness of honest communication for girls' social influence. Children recognize that dishonesty undermines mutual trust (Peterson, Peterson, & Seeto, 1983). Yet, by adulthood, men report using more deception than women do in everyday social interactions (Shippee, 1977). From our results, it appears that although both girls and boys are capable of using deceptive practices to achieve social influence, differences in the nature of male and female social bonds make deception skill more advantageous to adult males than to adult females (Western & Strum, 1983).

Alternatively, methodological differences in the measurement of dominance between Studies 1 and 2 may explain why sex differences emerged only from Study 2. In Study 2, dominance was assessed while subjects interacted in same-sex, ad hoc groups. In Study 1, preschoolers' dominance was assessed through behavioral observation of mixed-sex classroom interactions with familiar peers. Thus the possibility remains that deception skill plays as important a role for adult females in mixed-sex groups as it does for males in same-sex or mixed-sex contexts.

We found that the ability to produce cogent nonverbal masquerades predicted dominance in preschoolers and adult males. It may be tempting to attribute the dominant individual's influence over subordinates to the use of nonverbal manipulative techniques. However, our results suggest only that dominant individuals have a special *capacity* to enact convincing deceptions. Whether leaders actually use deception to beguile subordinates into things they would rather not do is an open question. Our research suggests, however, that if leaders chose to mislead us, their deceptions would be very difficult to detect.

NOTES

1. In two schools, each subject was observed for a total of six 10-min periods. Free play periods were less regular and access to the children was more restricted in the remaining school, so that only 30 min of observation was taken for each child.

2. Across all three schools, teacher rankings corroborated the behavioral assessment of dominance. The *z*-score transformations of teacher's dominance rankings (transformed so that high scores indicated high dominance) correlated significantly with behavioral dominance scores, $r(52) = .50$, $p < .001$. Teacher rankings for dominance also correlated with rankings for leadership, $r(52) = .81$, aggressiveness, $r(52) = .73$, helpfulness, $r(52) = .51$, and intelligence, $r(52) = .30$ (all $ps \leq .05$) but not with cooperativeness with peers, $r(52) = .12$, $p < .37$.

3. Analyses based on proportions were repeated using arcsine transformations. These results were virtually identical to those reported in the text.

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