# SMILES, SPEECH, AND BODY POSTURE: HOW WOMEN AND MEN DISPLAY SOCIOMETRIC STATUS AND POWER

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*ABSTRACT:* This study found that power and status have different effects on nonverbal behavior. Participants lived together for a term in ten member groups (50 women, 29 men) and rated their housemates on characteristics related to power (toughness and leadership) and sociometric status (popularity and being well-known). Smiling, arm and leg position, and total talking time were recorded in group discussions, one with housemates only and one with strangers included. Power, but not sociometric status, was associated with open-body postures in women and with frequency of talking in women and men. Smiling was unrelated to power and was positively correlated with sociometric status. Male body posture was more open, but women and men did not differ in frequency of talking or smiling.

Is smiling a signal of subordination? Many people have suggested that it is (Freedman, 1974; Henley, 1977), but the evidence is not clear-cut. Deutsch (1990) found that participants in a role-playing game who took the part of the interviewer felt more dominant and smiled less than participants playing the part of the applicant, but other experimental studies have found little or no indication that people in positions of authority smile less than others (Dovidio, Heltman, Brown, Ellyson, & Keating, 1988; Hecht & LaFrance, 1998; Johnson, 1994). Some studies have found that unsmiling men are viewed as more dominant than their smiling counterparts (Keating, 1985; Keating & Bai, 1986) but other studies have not found this effect

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(Deutsch, LeBaron, & Freyer, 1987; Graham & Argyle, 1975), or have found that smiling is far more strongly associated with happiness than with power (Halberstadt & Saitta, 1986). Smiling is used to gain approval (Rosenfeld, 1996), express embarrassment (Goldenthal, Johnston, & Kraut, 1981), and elicit leniency, but this does not mean that it indicates submission or appeasement (LaFrance & Hecht, 1995).

It is possible that the impression of smiling as a signal of dominance and subordination has been enhanced by the tendency of researchers to study nonverbal communication among strangers. Dominance attempts (at least among male adolescents) decrease as groups become better acquainted (Savin-Williams, 1977, 1979), and most studies of smiling involve strangers meeting for the first time in the psychologist's laboratory. It is also possible that some of the mixed results stem from differences in the types of smiles exhibited, a research area that is growing in sophistication and importance (Ekman & Friesen, 1982; Schneider & Josephs, 1991).

Less attention has been devoted by researchers of nonverbal behavior to the other side of the coin—distinguishing dominance, status, and power. The issue is particularly difficult because different fields and research areas often use these terms in different ways. To ethologists, dominance reflects priority of access to a valued resource, and consistent priority is reflected in dominance rank. The concept is therefore somewhat akin to status. To many psychologists, however, dominance is a personality characteristic involving a disposition to control others. Power, defined by Ellyson and Dovidio (1985) as "the ability. . . to control interactions with others," has a parallel set of usages, since the ability to control interactions can come either from a person's socially-determined position in society or from the person's personality and abilities (Hall & Halberstadt, 1997).

Because the word "dominance" is particularly problematic, I am using the words "status" and "power" rather than dominance, and follow Ellyson and Dovidio (1985) in their definitions of these concepts: status is a "socially valued characteristic . . . involving one's relative position in a prestige hierarchy," and power is "the ability . . . to control interactions with others." While power, as so defined, can come from one's socially-determined role or position, it can also come from one's personality and innate abilities. This study observes interactions in informal, egalitarian groups, hence power is used only in the latter sense.

Status hierarchies can exist in many domains (occupational, athletic, social) and each of these may be associated with different routes to success. In this paper, I am focusing on sociometric status—status in the social domain. It is not clear how strongly high sociometric status among adults is associated with high status in other domains, but some association is likely.

Studies of children and adolescents have shown that high sociometric status is associated with expected earning power (Weisfeld, Bloch, & Ivers, 1983; Dong, Weisfeld, Boardway, & Shen, 1996), with such prerogatives of rank as success in disputes (Weisfeld, Bloch, & Ivers, 1983, 1984) and with preferential access to scarce resources (Savin-Williams, 1979). It would be surprising if these status domains were not similarly associated in adults as well.

Researchers of nonverbal behavior usually do not measure both status and power in a single study, but the implications of studies on status are often extended to issues of power, and vice versa. This study investigates the degree to which this is justified, by correlating the frequency of certain nonverbal behaviors with peer-ratings of sociometric status (popularity and being well-known) and power (toughness and leadership).

Power (as used herein) can be expected to be associated with high status if it is an important route to attaining that status. However, this may often not be the case. Affiliative behaviors and social skills are often more important in achieving high status in non-human primate groups (Mitchell & Maple, 1985; Shively, 1985) and the same is probably true of people also (Ridgeway, 1987). Because women tend to be more affiliative (communal) in their interactions with each other, whereas men tend to be more assertive (agentic); a disjunction between power and status may be particularly likely in same-sex female groups (Cashdan, 1995).

This disjunction may lie behind some of the contradictory findings on dominance and nonverbal behavior. There is abundant evidence that women smile more than men (Hall, 1984; Hall & Halberstadt, 1986), and there is some evidence that they exhibit more closed body postures (Aries, 1982; Davis & Weitz, 1981; Hall, 1984). These differences in nonverbal behavior have been attributed to gender differences in social rank and position: greater smiling, closed-body postures, etc. are thought to signal subordination, and women may exhibit them more frequently than men because of women's subordinate position in society (Henley, 1977; LaFrance & Henley, 1997). However, smiling is also a sign of friendliness. If women use affiliative behaviors rather than personal power to gain high status, smiling for women could be associated with high status in all-female groups even though it might also be associated with low power. Coats and Feldman (1996) have shown that women with high status are more skilled than their peers at encoding happiness through their facial expressions. If this ability is associated with a greater readiness to smile when feeling happy, we should find more, not less, smiling among high-status women, at least in same-sex groups.

The meaning of closed vs. open body postures can also be clarified by

closer attention to the difference between status and power. The body postures of dominant individuals are usually reported to be more open than those of subordinates (Aries, Gold, & Weigel, 1983; Henley, 1976; Mehrabian, 1972; but see Burgoon, 1991) . However, it is not clear whether an association between open body postures and dominance is an assertion of power or simply an expression of relaxation. If open body postures are found to correlate most strongly with measures such as toughness, it would suggest that such postures are an assertive signal of personal power. If, on the other hand, open body postures are more strongly associated with popularity, it would be reasonable to view them, instead, as a by-product of relaxation and social ease.

These issues were explored by observing behavior in groups of well-acquainted adults. Eight groups, each consisting of ten same-sex students, lived for a term in University housing and participated in the study. Each student rated the other members of the group on a variety of characteristics, including measures related to sociometric status (popularity and being well-known) and power (toughness and leadership). Because these were egalitarian groups, the peer ratings reflect differences in personality and behavior, not formal rank or position. For example, people ranked high in leadership tended to act as leaders within the group; they were not assigned to leadership positions. Nonverbal behavior was observed in group discussions, and included frequency of smiling and fraction of time spent with arms and legs in an open position. Total talking time was also recorded, in order to determine whether verbosity is more strongly associated with power (Aries et al., 1983; Crosby, Jose, & Wong-McCarthy, 1981; Klein & Willerman, 1979), as is often supposed, or with caring and affiliation (Leaper, 1987).

## Methods

### *Participants*

The study was conducted among 50 women and 29 men living at the Sill Center, a university residential facility. Ten students lived there each term for reduced rent, with the understanding that they would participate as subjects in faculty research. During the period of this study, 50 women and 30 men (1 of whom did not complete the study) lived at the Sill Center. Participants were drawn from the entire student body and included a large number of different majors. Participants were not selected with respect to ethnicity, and reflected the composition of the University in being largely white.

The initial design called for the same number of women and men, but further replication is no longer possible as the Central Administration has converted the Sill Center from a research facility to office space. The small number of men is unfortunate. However, it is unlikely to introduce bias into the study, since there was no obvious difference in the willingness of women and men to participate. The choice of women or men as participants in a given term was made by the researchers, in keeping with the needs of a variety of research projects.

The mean age of participants was 21 years ($SD = 1.97$) for women and 23 years ($SD = 2.94$) for men. All students were unmarried and most came from middle-class families.

### *Procedure*

*Group discussions.* During the middle of the term, each Sill Center resident participated in two group discussions, one consisting of the ten group members alone (referred to henceforth as "housemates only"), and the other of group members meeting together with opposite-sex strangers of about the same age (referred to henceforth as the discussion "with strangers"). In the discussion with strangers, each Sill Center group was split into two groups of five, each of which met with three (or occasionally two) strangers (see Table 1). This was done in part because of unavoidable constraints of laboratory space, but it also served to increase the impact of the strangers while keeping the total size of the discussion group about the same in the two contexts. The strangers were student volunteers who agreed to participate in exchange for a gift of movie coupons. They participated in the discussion but their behavior was not recorded. During each discussion, the participants spent the first ten minutes after everyone had arrived in informal conversation. An ethical dilemma was then read aloud and participants were asked to discuss the dilemma and arrive at a consensus recommendation.

**TABLE 1**

**Group Composition**

| | Housemates only | With strangers |
|---|---|---|
| Female participants | 10 women/0 men | 5 women/2-3 men |
| Male participants | 10 men/0 women | 5 men/2-3 women |

The discussions were videotaped for later analysis. Participants sat in upholstered chairs arranged in an oval, to accommodate the rectangular shape of the room; there was no table in the room, and no "head" position. Three cameras recorded their behavior, and all participants were clearly visible on camera. Although participants knew that the discussion was being videotaped, they were not aware that their nonverbal behavior was an object of study.

*Behavior analysis.* The behavior coding included five minutes of the informal conversation (beginning after everyone had arrived and settled down) and ten minutes of the discussion of the dilemma (beginning three minutes after the reader had left the room). The tapes were stopped at 15 second intervals, and a single coder recorded arm position (closed, relaxed, open), open legs (presence/absence), and smiling (presence/absence). A second coder watched and listened to the tapes with a stopwatch, and recorded the total time each participant spent talking.

The code was developed and modified on the basis of pre-tests conducted with five coders, and a consensus scoring was used for later training. Specific definitions were developed, where necessary, in order to reach satisfactory agreement levels. The code used the following definitions of arm and leg position:

*Arm position:*

1. Arms closed: (a) both arms touching torso or (b) hands touching each other and neither arm resting on chair.
2. Arms relaxed: one or both arms at side or on arms of chair, and hands not touching and arms not touching torso.
3. Arms open: one or both arms extending out past chair, behind head, or behind body, or resting on back of chair.

*Leg position:*

Legs are open if they are (a) apart (more than 3 inches at knee) or (b) out straight, not bent at the knee.

It was not possible in this group setting to make a reliable distinction between different types of smiles, or between smiling and laughing, hence no attempt was made to do so. Coders were simply told to score a person as either smiling or not smiling. A specific definition of a smile was not used because agreement was high without it.

The coders for this study were trained on one of the pre-test tapes (a similar discussion with six participants) until agreement with the earlier coding was satisfactory on all variables ($r > .85$). Reliability within the

study itself was enhanced by using a single observer to code all instances of a given behavior (one coder did the nonverbal behaviors, the other recorded time spent talking). No checks were made for observer drift, but biases were minimized by doing female and male groups in random order and by completing all tapes for a given group before another group was observed (i.e., the housemate only discussions and the discussions with strangers were observed alternately throughout the two-month coding period). Neither coder knew the power and status ratings of participants.

*Peer ratings.* Peer ratings were done at the end of the term, and used a new procedure. Each participant was interviewed in private, and was shown ten cards, each containing the name of a housemate (Sill resident). The participant was then asked to place the cards along a yardstick, to indicate their relative positions on some attribute. They were asked to place one card at the bottom of the yardstick and one at the top, in order to anchor the ends. Within these extremes, however, they were encouraged to overlap cards, if they saw little or no difference between individuals, and to use the relative space between cards to indicate the degree of difference they saw between different individuals.

Participants rated their peers on the following attributes (in the following order): (1) how well they knew the person, (2) leadership, (3) popularity with members of the opposite sex (not used in this study), (4) toughness (defined as not being easily pushed around), (5) caring, and (6) popularity with members of the same sex. These ratings yielded scores between 1 and 35, corresponding to the nearest inch marked on the yardstick. The task was performed spatially rather than numerically, as the numbers on the yardstick faced the experimenter, not the participant. Each person's score on leadership, toughness, etc. was then computed by averaging the scores given by the nine other members of the group.

Agreement between raters was assessed separately for each of the eight groups, since each group had different raters. Agreement on ratings of popularity, leadership, and toughness were generally high. For popularity, the alpha values for agreement among raters averaged .80 for the five female groups ($SD=.10$) and .84 ($SD=.03$) for the three male groups. For toughness, these values were .82 ($SD=.13$) for females and .80 ($SD=.08$) for males, and for leadership .69 ($SD=.34$) for females and .92 ($SD=.03$) for males. Alpha for ratings on caring were somewhat lower among both females ($M.=67$, $SD=.30$) and males ($M=.61$, $SD=.29$), and ratings for how well-known the person was reached a similar level of agreement among the male groups only ($M=.64$, $SD=.30$). In the female groups, alpha values for well-known averaged 0 with a very high standard devia-

tion (.94). This probably reflects the fact that some of the female groups were characterized by strong cliques, and people well-known to members of one clique were poorly known to members of another. While this measure is reported in the tables, its lack of reliability for females should be kept in mind. Alpha values for the two power variables (leadership and toughness) did not differ significantly.

A person's popularity is often measured by counting the number of people who name that person as a friend. In this study, however, participants rated someone high on popularity if they judged the person to be well-liked by others, even if the rater did not personally care for the person. As shown below, ratings of same-sex popularity measured in this way correlated very strongly ($r > .80$) with ratings of overall status within the group.

*BSRI.* The Bem Sex Role Inventory (BSRI, Bem 1974) was administered to a subset of the sample. The BSRI is a questionnaire that assesses the extent to which the respondent has stereotypically feminine or masculine characteristics. It contains two separate scales, one for feminine items and one for masculine items; these can be combined to give an androgyny score, although that was not done here. The BSRI was used less to explore the effects of gender role than to get additional information on power. High scores on the masculine items of the BSRI were expected to correlate with high peer ratings on toughness, and high scores on the feminine items were expected to correlate with high peer ratings on caring.

## Results

### *Power and Status Measures*

The measures of power used in this study were significantly intercorrelated. Toughness and leadership ratings were correlated in both women ($r=.61$) and men ($r=.88$, see Table 2). The masculine items of the BSRI were, as expected, also correlated with these items, although not as strongly (note, however, that the BSRI correlations are based on small sample sizes).

Sociometric status was assessed by peer ratings on popularity and how well-known the person was. These variables were correlated with each other both in women ($r=.56$) and in men ($r=.57$, see Table 2), in spite of the low reliability of the latter measure among some of the female groups. Three of the groups in this study, and two similar groups participating in a different study, were also asked to rate their peers directly on status within

**TABLE 2**

**Intercorrelations Among Independent Variables**

| Item | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Women ($n=50^a$) | | | | | | |
| 1. Toughness | .56 | .61 | .08 | .14 | −.38 | −.12 |
| 2. BSRI—masculine | | .33 | −.12 | −.07 | −.36 | −.18 |
| 3. Leadership | | | .58 | .40 | .25 | .09 |
| 4. Popularity | | | | .56 | .68 | .31 |
| 5. Well-known | | | | | .49 | .33 |
| 6. Caring | | | | | | .31 |
| 7. BSRI—feminine | | | | | | |
| Men ($n=29^a$) | | | | | | |
| 1. Toughness | .38 | .88 | .64 | .33 | .11 | −.17 |
| 2. BSRI—masculine | | .32 | .38 | −.15 | −.03 | −.20 |
| 3. Leadership | | | .73 | .40 | .29 | −.22 |
| 4. Popularity | | | | .57 | .47 | −.42 |
| 5. Well-known | | | | | .56 | .60 |
| 6. Caring | | | | | | .09 |
| 7. BSRI—feminine | | | | | | |

*Note.* Items are listed in an order that puts highly correlated items together. This is not the order in which they were presented in the interview. Table shows Pearson correlation coefficients.

[a] except for the BSRI scores, where $n=30$ for women and $n=19$ for men.

the group. This measure correlated very strongly with popularity ($r=.82$ for women, $r=.81$ for men). This result indicates that popularity is a good measure of overall status, and it supports the validity of using popularity as a general status measure in unstructured groups.

As Table 2 shows, the correlations among these variables were similar for women and men in most areas, but popularity among women and men was predicted by different attributes. Among women, popularity was positively correlated ($r=.31$) with feminine items on the BSRI but was unrelated to scores on the masculine BSRI items. Among men, the relationship between popularity and feminine BSRI scores was negative ($r=-.42$), while the relationship with masculine BSRI scores was positive ($r=.38$). Apparently, feminine behaviors detract from a man's sociometric status but masculine (assertive) behaviors do not detract from a woman's. Popularity was

also positively correlated with toughness in men ($r=.64$) but not in women.

*Behavioral Measures: Sex and Context*

Contrary to previous findings, there were no significant differences between women and men in frequency of smiling. Women and men were also similar in total talking time. Women were, however, significantly more likely to sit with legs together and arms close to the body (see Table 3).

Paired comparisons between the two contexts (housemates only vs. with strangers) showed little difference in behavior among the women. Men were more affected by the change in context: they smiled less ($t=-2.7$, $p=.01$) and talked more ($t=2.8$, $p=.01$, all $p$ values two-tailed)

**TABLE 3**

**Mean Scores for Women and Men**

| | Women | | Men | | |
|---|---|---|---|---|---|
| Behavior | *M* | *SD* | *M* | *SD* | *t* |
| Housemates only[a] | | | | | |
| Arms open | 6 | 15 | 8 | 11 | −0.89 |
| Arms closed | 31 | 28 | 17 | 21 | 2.52* |
| Legs open | 22 | 32 | 84 | 24 | −9.83*** |
| Smiling | 10 | 5 | 13 | 9 | −1.91 |
| Talking | 16 | 10 | 15 | 10 | 0.74 |
| With strangers[b] | | | | | |
| Arms open | 9 | 17 | 8 | 12 | 0.83 |
| Arms closed | 33 | 29 | 13 | 15 | 3.90*** |
| Legs open | 25 | 37 | 82 | 30 | −6.90*** |
| Smiling | 10 | 6 | 9 | 6 | 0.80 |
| Talking | 18 | 11 | 20 | 10 | −0.61 |

*Note.* Talking is percent of total observation time spent talking. Other variables are percent of scans with wide open arms, with closed arms, with open legs, and with smiles. *t* values are for differences between women and men (tests for differences between settings are discussed in the text).

[a] $n=29$ males. $n=50$ females, except smiles ($n=49$) and talk ($n=47$)

[b] $n=29$ males. $n=49$ females

* $p < .05$. ** $p < .01$. *** $p < .001$, two-tailed

in the discussion with strangers present. These figures obscure some interesting differences, however, because high and low status individuals did not respond to the context change in the same way. This will be taken up in a later section.

### *The Nonverbal Display of Power*

Because participants interacted in groups, it was important to see whether the relationship between peer rating and behavior was approximately the same in all the groups. Where groups differed significantly in the relationship between a given behavior and a power/status rating, no further analysis was done. This did not happen more often than would be expected by chance.

This analysis was done using ANCOVA (analysis of covariance), with nonverbal behavior as the dependent variable, peer rating as the covariate, and the discussion group as the grouping variable. Normally ANCOVA is used to explore the difference among groups, controlling for the continuous variable (the covariate). In this case, however, the covariate (peer rating) was the variable of interest, and the discussion groups were included to see whether they had a significant effect on the relationship between rating and nonverbal behavior. Using ANCOVA in this way is equivalent to doing a regression of peer rating on behavior, with dummy variables for the discussion groups included in the model.

The ANCOVA, therefore, allowed for the assessment of differences in means and slopes among groups. The four discussion types (sex x context) were analyzed separately. Where slopes were the same but the means differed among groups (in other words, where the amount of a behavior varied, but the relationship between the behavior and peer rating was the same), ANCOVA was used to assess the significance of the relationship between the covariate and the dependent variable. The same was done where the groups were the same in both mean and slope. In the latter case, however, the groups were also pooled so that Pearson correlation coefficients could be computed, since this provides a more interpretable statistic for evaluating the relationship between behavior and peer rating. These correlations are shown in Tables 4 through 7. Significance values computed this way were virtually identical to those computed using the ANCOVA (i.e., partialling out the effect of group had little or no effect); if the p-value differed, it is indicated in the table.[1]

Total talking time was the most consistent indicator of high power, both in women (Table 4) and men (Table 5). The strength of the correlation in men is unusually high. In the discussion with strangers present, nearly

**TABLE 4**

**Correlations of Behavior with Power Ratings (Women Only)**

| | Power ratings | | |
|---|---|---|---|
| Behavior | Toughness | Leadership | BSRI-masc. |
| Housemates only: | | | |
| Arm score[a] | .44*** | .28* | .33† |
| Open legs | −.05 | .11 | −.08 |
| Smiling | −.14 | −.05 | −.14 |
| Talking | .33* | .43** | .48** |
| With strangers: | | | |
| Arm score[a] | +[b]† | +[b]* | [b] |
| Open legs | .30* | .29* | .42* |
| Smiling | −.01 | .13 | −.42* |
| Talking | .39** | .52*** | .28 |

*Note.* $n=50$ for toughness and leadership, $n=30$ for BSRI-masc. Technical difficulties reduced the sample size to 49 for smiling and to 47 for talking in the discussion with housemates only, and to 49 for all nonverbal behaviors in the discussion with strangers.

[a] Three arm positions (closed, neutral, open) were recorded. Arm score combines the two extreme positions so that larger values indicate a more open arm posture (i.e., percent of scans with arms open minus percent of scans with arms closed).

[b] Slope or means differed among groups, hence no correlation was calculated. If there was a difference in means but not in slope, the significance of the slope was calculated with ANCOVA. The $p$ value in this case excludes variance due to group. The direction of significant effects is indicated by +/−.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

60% of the total variance in male talking time was predicted by toughness rating.

Women high in power had more open body postures than other women (Table 4). Their arms were more open in both contexts, although their legs were more open only when they were in the discussion with strangers. The three arm positions recorded (wide open, neutral/relaxed, closed) are combined into a single index in the tables, but were also analyzed separately. Both open and closed arm positions contributed to the relationship between power and open arms: in the housemates-only discussion, tough women were somewhat more likely to have wide open

**TABLE 5**

**Correlations of Behavior with Power Ratings (Men Only)**

| Behavior | Power ratings | | BSRI-masc. |
|---|---|---|---|
| | Toughness | Leadership | |
| Housemates only: | | | |
| Arm score[a] | [b] | [b] | [b] |
| Open legs | −.02 | −.06 | .05 |
| Smiling | .14 | .05 | +[b]* |
| Talking | .64*** | .63*** | .16 |
| With strangers: | | | |
| Arm score[a] | −.01 | −.02 | [b] |
| Open legs | −.24 | −.21 | .00 |
| Smiling | −.11 | .04 | [b] |
| Talking | .77*** | .63*** | .07 |

*Note.* $n=29$ for toughness and leadership, $n=19$ for BSRI-masc. (behavior variables were coded for all participants)

[a] Three arm positions (closed, neutral, open) were recorded. Arm score combines the two extreme positions so that larger values indicate a more open arm posture (i.e., percent of scans with arms open minus percent of scans with arms closed).

[b] Slope or means differed among groups, hence no correlation was calculated. If there was a difference in means but not in slope, the significance of the slope was calculated with ANCOVA. The $p$ value in this case excludes variance due to group. The direction of significant effects is indicated by +/−.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

arms ($r= .24$, $p< .10$) and far less likely to have arms in a closed position ($r=-.42$, $p=.002$). Women high in leadership were more likely than their peers to have their arms in a wide open position ($r= .28$, $p<.05$).

Smiling was completely unrelated to toughness and leadership ratings among either women (Table 4) or men (Table 5). The patterning with the masculine BSRI items is difficult to interpret, with high-scoring women smiling less in the discussion with strangers and high-scoring men smiling more in the discussion with housemates. Taken together, however, these results do not support the hypothesis that smiling is associated with low personal power.

**TABLE 6**

**Correlations of Behavior with Status Ratings and Affiliation (Women Only)**

| | Status ratings | | | |
|---|---|---|---|---|
| Behavior | Well-known | Popular | Caring | BSRI-fem |
| Housemates only: | | | | |
| Arm score[a] | −.08 | −.06 | [b] | .01 |
| Open legs | −.15 | −.06 | −.06 | .08 |
| Smiling | .08 | .24† | .19 | .32[c]* |
| Talking | .13 | −.04 | −.05 | .08 |
| With strangers: | | | | |
| Arm score[a] | [b] | [b] | [b] | −.03 |
| Open legs | .13 | .07 | −.15 | .09 |
| Smiling | .39** | .39** | .40** | .19 |
| Talking | .21 | .17 | .13 | .02 |

*Note.* $n = 50$ for caring, well-known and popular, $n = 30$ for BSRI-fem. Technical and other difficulties reduced the sample size to 49 for smiling and to 47 for talking in the discussion with housemates only, and to 49 for all nonverbal behaviors in the discussion with strangers.

[a] Three arm positions (closed, neutral, open) were recorded. Arm score combines the two extreme positions so that larger values indicate a more open arm posture (i.e., percent of scans with arms open minus percent of scans with arms closed).

[b] Slope or means differed among groups, hence no correlation was calculated. If there was a difference in means but not in slope the significance of the slope was calculated with ANCOVA. No such cases were significant in this table.

[c] Significance calculated by ANCOVA, excluding variance due to group; $p < .10$ with groups lumped

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

*The Nonverbal Display of Sociometric Status*

Women with high sociometric status smiled more than their low-status peers, particularly in the discussion with strangers (see Table 6). It was suggested in the introduction that smiling, as a sign of friendliness and affiliation, may be used by women as a way to gain high status. This interpretation gains support from the finding that women who smiled more in the discussion with strangers were judged to be not only popular with peers but also caring. High BSRI-feminine scores were also associated with smiling, at least in the housemates only discussion. There were similar

**TABLE 7**

**Correlations of Behavior with Status Ratings and Affiliation (Men Only)**

| | Status ratings | | | |
|---|---|---|---|---|
| Behavior | Well-known | Popular | Caring | BSRI-fem |
| Housemates only: | | | | |
| Arm score[a] | [b] | [b] | [b] | −.10 |
| Open legs | −.04 | .05 | .07 | .05 |
| Smiling | [b] | .23 | .32† | .30 |
| Talking | .37* | [b] | .34† | .16 |
| With strangers: | | | | |
| Arm score[a] | [b] | −.06 | .04 | .13 |
| Open legs | −.07 | .09 | .09 | −.12 |
| Smiling | −.20 | .03 | −.10 | [b] |
| Talking | .25 | .49** | −.03 | −.21 |

*Note.* $n = 29$ for caring, know well, and popularity. $n = 19$ for BSRI-fem. (behavior variables were coded for all participants)

[a] Three arm positions (closed, neutral, open) were recorded. Arm score combines the two extreme positions so that larger values indicate a more open arm posture (i.e., percent of scans with arms open minus percent of scans with arms closed).

[b] Slope or means differed among groups, hence no correlation was calculated. If there was a difference in means but not in slope the significance of the slope was calculated with ANCOVA. No such cases were significant in this table.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

trends for men in their housemates only discussions (see Table 7). Most of the correlations in men did not reach statistical significance (sample size was small), but the size of the correlations and the consistency of the patterns suggest that women and men may not differ in this regard, at least in groups of same-sex friends.

Sociometric status was not related to body posture in either women or men. High-status men talked more than low-status men, but there was no relationship between status and talking time in women.

*Effects of Context*

For this analysis, scores on leadership and toughness were combined into a "power" index. Popularity was used as the indicator of sociometric

status because of the poor agreement among female raters on the variable "well-known," but results were similar when popularity and well-known were combined into a single index of sociometric status. Median splits were used to identify people with high as opposed to low power and high as opposed to low sociometric status.

High-power and high-status women talked more in the discussion with strangers than they did in the discussion with housemates only ($t=2.45$, $p=.02$ for power, $t=2.17$, $p=.04$ for status), but low-power and low-status women did not change their talking behavior. There was no difference in any of their other behaviors.

High-power and high-status men also talked more in the discussion with strangers ($t=2.48$, $p=.03$ for power, $t=2.16$, $p=.05$ for status), but they smiled less in this context, not more ($t=-2.45$, $p=.03$ for power, $t=-2.84$, $p=.01$ for status). Low-status men did not change their behavior by context, with the possible exception of slightly more talking in the discussion with strangers ($t=1.88$, $p=.08$).

## Discussion

Do subordinate people smile more? The results from this study suggest that toughness and leadership are unrelated to smiling, at least in groups of well-acquainted adults, and that people with low sociometric status smile *less* rather than more. The latter effect was statistically significant for women, and a trend in the same direction appeared for men when they were alone with their housemates. Because smiling scores were higher among caring as well as popular people, it seems reasonable to assume that smiling in these discussions was more a signal of affiliation than of subordination. Halberstadt and Saitta (1986, p. 268) found that although smiling was perceived as somewhat submissive, "the overwhelming perception was as a sign of friendliness." The results of this study support their conclusion.

We might expect signals of dominance to lessen as groups become well-acquainted, and signals of friendliness to increase. The differences between studies, therefore, may largely reflect the degree to which participants were well-acquainted. This study was somewhat unusual in that the people being observed were groups of well-acquainted adults. This may explain why smiling in this study signalled friendliness, whereas smiling in experimental studies using unacquainted individuals sometimes signals subordination.

The results of this study suggest that smiling is important in attaining

high sociometric status in all-female groups. Toughness is not the only way of attaining high status, and the tendency of researchers to extrapolate from power to status and vice versa may lead to misleading conclusions.

The absence of a significant sex difference in smiling was unexpected, but may be interpretable in light of the fact that the sex difference in smiling is smaller in situations lacking social tension (Hall & Halberstadt, 1986). Participants in this study were well-acquainted and the laboratory setting was designed to be comfortable, with a carpeted floor and upholstered chairs. Participants seemed to forget that the cameras were there soon after their friends arrived. The discussion with opposite-sex visitors probably carried greater social tension for participants, and it is interesting that the men smiled significantly *less* in this context than they did when alone with their housemates. The sex difference in smiling that often emerges in tense situations, in other words, may be a consequence of men smiling less in this situation, rather than women smiling more.

Some researchers have emphasized that women lead in a different manner than men, being less autocratic and directive and more inclined to facilitate participation by all members of the group (Eagly & Johnson, 1990; Rosener, 1990). Toughness is not thought to be typical of the female leadership style. Nonetheless, female ratings on leadership and toughness were highly correlated (as they were in men), and open body postures were strongly correlated with both of these characteristics in women.

Open body postures are widely claimed to be signals of dominance, but it is not clear whether they are displays of toughness or simply a consequence of the ease and relaxation that can be expected to accompany a position of high regard. This study found that open body postures (especially open arms) were correlated with toughness in women but not with sociometric status (popularity and being well-known). This suggests that open body postures in women, at least as measured in this study, are a power display rather than simply a by-product of relaxation accompanying high status.

Verbosity in this study was also clearly a power signal, particularly in men and particularly when strangers were present. Correlations between toughness and total talking time varied from a low of .33 in female groups of housemates only to a high of .77 in male groups when strangers were present.

Limited resources precluded use of a design that would isolate effects due to context, but the discussion with opposite-sex strangers was included for exploratory purposes. In general, high power and high status people were more likely to change their smiling and talking frequency according to context; perhaps this reflects the fact that high power people have

greater license to smile or not as they choose (Hecht & LaFrance, 1998). Because the visitors were both strangers and members of the opposite sex, it is impossible to know which of these effects was important in eliciting the change in behavior. In order to answer this question we would need to observe behavior among same-sex and opposite-sex friends as well as same-sex and opposite-sex strangers. The latter is a common research design in studies of nonverbal behavior, but the results of this study (see also Moskowitz 1993) show that nonverbal behavior among friends warrants more attention than it has thus far received.

## Note

1. When individuals are observed in groups, there is always a potential problem with nonindependence of data. I used a randomization test to see whether individuals within groups behaved more or less similarly than would be expected by chance. I rearranged the samples into 1000 simulated groups of the same size as the actual groups, and, for each behavior, compared the variance of the actual groups with the variances of the simulated groups. In groups with housemates only these variances were similar, indicating that people in these discussion groups were not noticeably affected by the other discussants. In the discussions with opposite-sex strangers, however, 20% of the behavior variables showed statistically significant dependencies (alpha = .05, two-tailed). Because of the lack of dependencies in the housemates-only discussions, I think that the most likely explanation is not that subjects were affecting each other's behavior, but rather that the characteristics of the strangers differed from term to term, and group members were responding in similar ways to the same stimulus (i.e., a particular set of opposite-sex strangers). This would indicate that group differences must be considered, although there is probably not a problem with dependencies among subjects.

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